عـدد ٣٩ عدد مزدوج ١٩٥٨

SUDAN NOTES AND RECORDS

incorporating
Proceedings of the
Philosophical Society
of the Sudan

المندمجة فيها وقائع الجمعية الفلسفية بالسودان

1958

VOLUME XXXIX · DOUBLE NUMBER

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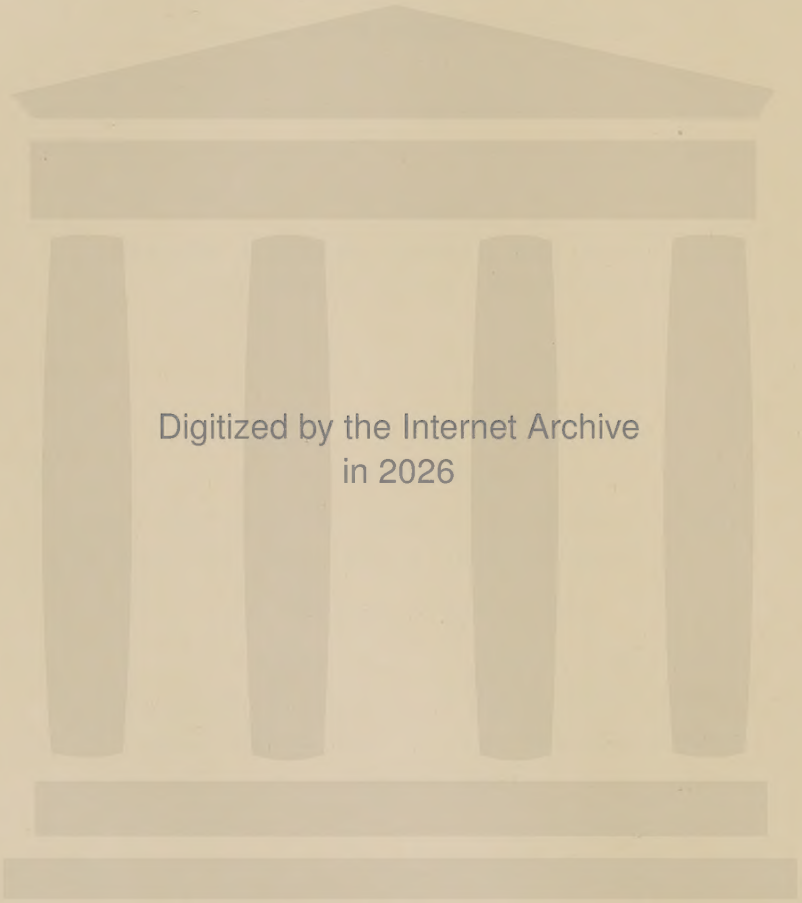
KHARTOUM, 1958



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Transliteration of the Arabic Alphabet

adopted by the Editors of *Sudan Notes and Records*

ا	at beginning of word omit, hamza (') elsewhere	ذ	dh (coll. d)	غ	gh
		ر	r	ف	f
		ز	z	ق	q (coll. g)
ب	b	س	s	ك	k
ت	t	ش	sh	ل	l
ث	th (coll. t or s)	ص	ṣ	م	m
ج	j or g	ض	ḍ	ن	n
ح	ḥ	ط	ṭ	ه	h
خ	kh	ظ	ẓ	و	w
د	d	ع	‘	ي	y

VOWELS

fatha	a,	lengthened	ā
kasra	i,	,,	ī
damma	u,	,,	ū

The ل of the article always remains *l*.

The silent *t* (ة) is omitted.

DIPHTHONGS

ى —ai (as in aisle).

و —au (as in mauser).

NOTES

1. The system is not applied to well-known names, such as Khartoum, Omdurman, etc.

2. The vowel sounds of *e* in ‘ get ’ and *o* in ‘ hot ’ with the corresponding long vowels (*a* in ‘ gate ’ and *o* in ‘ home ’), which occur only in the colloquial, are expressed by e, o, ē, ō.

e.g. beled, Mohammed, bēt (or beit), hōsh.

Ei may be used as alternative to show the long ē.

3. In geographical names the conventional spelling used by the Sudan Government Survey Department is followed, although not always agreeing with the above transliteration.

4. At present phonetic type is not available for proper reproduction of non-Arabic African languages.

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SUDAN NOTES AND RECORDS

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VOL. XXXIX DOUBLE NUMBER 1958

EDITORIAL

The Editor apologises to subscribers and readers for the heavy delay in producing Vol. XXXIX of *Sudan Notes and Records*. He can well understand that readers become impatient; more especially new subscribers, who naturally wish to see something for their money without too long a delay. He can only plead in extenuation a very great increase in his professional duties in the last eighteen months, an increase which has inevitably reacted unfavourably upon the performance of his honorary commitments.

Volume XXXIX contains the long-promised Sudan Bibliography—but only an instalment of what was promised in the last Editorial. The published instalment contains mainly material published in 1955 and 1956, but the opportunity has been taken to include certain items omitted in earlier issues. Articles published in recent issues of *Sudan Notes and Records*, in the volumes of *Kush* published up to 1956, and in reports of recent Conferences held by the Philosophical Society of the Sudan, have been listed separately. It is hoped that this service, which it is proposed to continue, will prove of value to students interested in specific subjects relating to the Sudan. The Editor believes that, newspaper articles apart, this Bibliography and that published in Vol. XXXVI, Part 1, provide a very comprehensive coverage of material on the Sudan published in Western European Languages between 1952 and 1956. It is however obvious that our coverage of material in Arabic is very far from complete; and on publications in Eastern European languages we have scarcely anything at all. The Editor would be grateful to any reader who could help to fill this gap by forwarding, from time to time, relevant bibliographical material.

This volume also contains the report of the Third Annual Conference of the Philosophical Society, held as long ago as December, 1954, on the topic of "Physical Sciences in the Sudan". The delay has been mainly due to changes of personnel, which has made it difficult to trace and collect the material concerned; but with this publication all the Conference Reports from the Second (1953) to the Sixth (1957) are now in print either in this journal or as separate publications obtainable from the Philosophical Society. The report of the Seventh Annual Conference on the topic of "The Sudan in History" will be published in Vol. XL of *Sudan Notes and Records*, which will indeed have a strong historical bias.

The Editor wishes to thank readers, subscribers and contributors of articles for their continued support of *Sudan Notes and Records*.

SOILS AND LAND USE IN THE VICINITY OF THE THREE TOWNS

by

G. A. Worrall

I. THE DISTRIBUTION, PROPERTIES, AND AGRICULTURAL USE OF THE SOILS

Introduction

The area investigated and mapped comprises about a hundred square miles including the rivers and the Three Towns. The soils were studied initially by digging pits two metres deep, examining and recording features of the profiles exposed, and taking samples of soil at $\frac{1}{2}$, 1, 2, 3, 4, 5, and 6 foot depths from each for analytical purposes. This established the kind of soils present, and an examination of surface features in conjunction with aerial photographs enabled boundaries to be fixed and a map to be drawn (Map 1).

The Distribution and Properties of the Soils

It will be seen that the soils are put into three groups and that these are generally sharply divided from each other. Each group has been subdivided and nine soils have been mapped (Map 2).

The largest group is the High Level, which consists mostly of clays, but includes some sands. They lie in the south and east parts of the district and extend beyond the district into the Gezira and to the east of the Blue Nile. They occur on flat land, usually away and well above the river, though it should be noted that no land in this district, except the Merkhiyat Jebels to the north-west, is more than about six metres above the flood levels of the rivers. The sands are very subordinate, so that most attention has been paid to the clays. These have three distinct horizons in their profile, a top horizon which is a brown sandy soil about a foot thick, overlying the main horizon consisting of a dark grey or brownish-grey clay, two to three feet thick, which in turn overlies a pale brown horizon which may be clayey but is sometimes sandy. The soils are rich in calcium carbonate concretions which are mostly grey or black at the top of the soil but are white or pale brown lower down. There is frequently gypsum in the form of white fibres (satin spar) in the second horizon about $2\frac{1}{2}$ to 3 feet from the surface, and sometimes small lens-shaped crystals of gypsum occur a little higher in the profile. The two top horizons are generally well structured, and the second is characterised by oblique curved cracks with smooth surfaces between which the fibrous gypsum develops. The third horizon is usually compact and hard.

Laboratory analyses show that these soils are strongly saline and rich in sodium, and the salts and sodium have a distribution in the soil profile which follows a well-marked regime which is also followed by the values for moisture (Table 1). The amounts are low at the top, but increase rapidly downwards to a maximum at 2 or 3 feet and then fall off gradually further down the profile. In all cases the amounts of salts, which are mostly sulphate and chloride of sodium, are high to very high at their maximum. Other analyses show that these soils, as with all others in the district, are very poor in organic nitrogen and consequently inorganic matter also. In nearly all cases the amounts of organic nitrogen measured were less than 0·1 per cent. The soils are alkaline (pH 8–9·5) heavy (45–55 per cent clay fraction), rather low in nitrate though this may concentrate in the salty layer, low in available phosphate, but rather high in available potash.

The High Level Sands, which are best developed south of Khartoum, appear to lie on the High Level Clays, and have been formed by the blowing of surface material during "habubs" to form dunes or irregular spreads wherever there is any obstacle to movement such as walls, houses, bushes and fences. The source of the sand is probably the top horizon of the High Level Dark Clays, but near the rivers some may consist of old river banks. These sands are hardly soils, for they show no profile development except for occasional carbonate accumulation. They are very dry in the top two metres, and are very low in soluble salts (Table 1). Their chief interest lies in their mobility, for they are still liable to blow, and in their ability to support tree growth better than clays. This is well seen in aerial photographs, and forms a soil mapping criterion. On the other hand the sands are usually poorer in grass growth than are the clays.

The Riverain Soils (Group 2, Map 2) are a very varied group as is usual with alluvial soils. Only the White Nile Clays show consistent features, and these are grey clays (60–70 per cent clay fraction) throughout the profile, and have a steady, rather low, soluble salts and sodium status. The soils adjoining the Blue Nile and Main Nile may have any texture from coarse sand to heavy clay. However, they have some features which are usually common : they are brown to grey-brown, and where they are heavy they pass down to silts and then to sands below, often with an accumulation of white carbonate at the junction of the layers, indicating a point of hold-up in rising water, which on evaporating, precipitates its calcium carbonate. There is a great range of salinity and sodium content. The values are usually much lower than those for the High Level Dark Clays, and there is some relation to the texture in that the silts and sands are always low in salt, and form the best land in the district. The clays vary widely in their salinity, the most saline occurring in the lowest places.

The Nubian Series Soils (Group 3) all occur to the west of the rivers in the neighbourhood of Omdurman. The dominant soil is the Red Sand-Ironstone Soil which has three horizons, an upper loamy reddish sand overlying a bed of brown small stones, more or less rounded and glazed, and called pea-iron gravel from the size of the stones. This may either lie on a third horizon of rubble of sandstone or mudstone derived from the break-up of the Nubian Series rock, or on concretionary masses of carbonate resembling river carbonate. Analyses show that these soils are deficient in moisture and very low in soluble salts, sodium and other soluble constituents.

The Pea-Iron Gravel Soil is a variant of the Red Sand-Ironstone Soil, in which the top horizon is missing. It occurs in small areas south of Omdurman, and is much dug for the gravel which is used for surfacing paths. Nearer the river the land slopes, gullies and wadis occur, and the surface soil is either very thin or has been completely eroded away leaving rubbly sandstone.

The Agricultural Use of the Soils

Of the three main groups only the Riverain Soils are intensively cultivated. They are irrigated by pump, sagia or shaduf, and various crops, particularly vegetables for the town markets, are grown. They are variable textured soils, but are generally good, especially near the river where they are silty and have a good water permeability and retention, and generally a low salinity. Being low they are easy to irrigate, and some, which are liable to flood each year, are not necessarily irrigated but are planted up as the flood recedes.

In contrast, the High Level Dark Clays are very little used. Apart from one large farm and some patches of scattered rain-grown dura, there is nothing on these soils

except the natural vegetation of thin annual grasses and scattered acacia scrub trees, and this is usually absent near the towns because of the depredations of goats and man. As agricultural land they have two main disadvantages: they are strongly saline, and their elevation is such that irrigation is only possible by means of large pumps.

The High Level Sands have no agricultural use. They have a poor retention of water, are poor in plant nutrients, and their surface is usually irregular. Much of their surface has already been built on and parts have been used for growing mesquite trees, and they appear to be well suited to this latter purpose.

The Nubian Series Soils are also scarcely used owing to their general poverty and uneven surface. Where the top horizon is loamy a fair crop of rain-grown dura or lubia may be grown, depending very much on the season's rain, but the land is not suitable for extensive pump schemes, partly because it would require a great amount of levelling, and in the process the gravelly second horizon or even the stony third horizon might become exposed. Also the most suitable land is high and some distance from the river, and the costs of lifting and carrying the water are therefore prohibitive.

Acknowledgements

This section embraces some of the work carried out by the writer during the period 1953–56 for a Ph.D. degree, and includes those results which are thought to be of general interest to the people of this country. A great deal of help was obtained both here and in England, for which I am extremely grateful. In particular, I would like to thank the former Chief of the Research Division (Dr. T. N. Jewitt), the Government Geologist, and the Government Chemist, for providing access to their files, and to Mahmoud Mohammed Siraj El Nour for his considerable help in carrying out some of the routine laboratory analyses.

II. THE VALUE AND POSSIBLE FUTURE DEVELOPMENT OF THE LAND

The growth of the Three Towns and especially of Khartoum since the Second World War has been remarkably rapid. Before the War Khartoum, except for the "Old Deims", was almost wholly confined within the Ring Road ; since then the area it occupies has doubled. The extension has driven directly southwards, being confined east and west by the aerodrome and the industrial area respectively. Less spectacular expansion has occurred in Khartoum North where development has been mostly north, again confined east and west by the industrial area and the Nile respectively. Omdurman has grown very little since the War, and it is evidently a less popular town than it used to be, but it is nevertheless a large town with a bigger population than either of the other two. The result of this expansion in Khartoum and Khartoum North is the engulfing of villages and formation of extensive suburbs, the extremities of which are becoming further and further from the centre of the town. It is now over three miles from the outskirts of Khartoum to the Post Office, and people living in Khartoum North and Omdurman and working in Khartoum may have to travel daily as much as six miles each way.

This sprawl of the towns is undesirable in other ways. It is uneconomic because more buses, taxis, and other forms of transport are required to take people to work, and because land is being taken up which could be used for other purposes. It is also unaesthetic since extensive suburbs especially on flat land can be very depressing

to the viewer. Although it is of the first importance that the inhabitants should be housed, it is also desirable that the towns should not become too unwieldy in size, and that there should be easy access to the town centres or subsidiary centres, and to open spaces. It is important, too, that good agricultural land should be preserved for agricultural purposes, especially in the vicinity of large towns which need to be supplied with fresh vegetables and fruit. It is the purpose of this paper to describe the soil and site characteristics of the land around the towns, which are of importance in development, and suggest how the various types might be used to the best advantage in the future.

From a development point of view the most important soil features in this district are texture, salinity and slope, and these, together with certain other features, have been used to assess the general agricultural value of the land. These values, put into five categories, are represented in Map 3. Where considerable slopes occur, these are also represented.

It will be observed that extensive flat clay lands lie to the south and east, with varied but generally lighter-textured soils near the rivers, except for the White Nile which is bordered with clays. To the west of the rivers the soils are consistently stony or sandy.

Salinity is greatest in the clay lands away from the river; less in the riverain soils, though this is very varied, the light-textured soils having a low salinity and the clays high or low according to their topographical position; and very low in the soils west of the river.

Most of the district is remarkably flat and lies only a few metres above the flood level of the rivers. The most prominent slopes are those on the Omdurman side where the relatively high land falls away to the river or to the khors. Elsewhere the slopes are slight and restricted to the edges of the flood plains. Away from the rivers some sandy soils may result in low rises or irregular ground as in south-east Khartoum and the mesquite forest near Rumeila village. Sloping and hilly ground may enhance the value of an area for building since it has an aesthetic advantage over flat land, but agriculturally such lands are generally unsatisfactory, especially in the arid conditions such as occur in the Northern Sudan, where the ground must be irrigated and therefore levelled before it can be used. Also such lands in this district are mostly sandy or stony, so that there is no demand for them for agricultural purposes.

The bulk of the best agricultural land lies in or near the flood plains of the rivers. It varies in texture considerably, the best soils being those of intermediate texture, the so-called silts, and some of these have been mapped separately (Map 2). They have the important practical advantage that they lie low and are near the river and can therefore be watered easily by sagia or shaduf. Their liability to flooding and erosion by the river protects a large part of these soils from encroachment by buildings, though where the land is high enough to be safe it is in great demand for building expensive houses because of the amenity provided by the river. However, the Three Towns are in a better position than many expanding towns which frequently have to solve the conflicting claims of agriculture and building in first class agricultural land. Not that the low-lying riverain lands are entirely safe: attractive central areas like the Sunt Forest could and might be enclosed by an embankment, and used for housing estates. Instead of this the more sandy soils such as those at the upstream end of Tuti Island might well be used for building. It would also seem a fairly simple and inexpensive engineering project to cut off the river channel between Tuti Island and Khartoum North by embankments at each end which would also serve as roads and

so link the island to the mainland. The enclosed low-lying sandy land, adequately protected against the high flood, could be developed for building and so help to prevent the sprawl of the towns outwards.

The type of soil on which most building has been carried out is the clay land which lies on flat ground distinctly above the rivers to the south and east of the district. They have not been much used for agriculture in the past for several reasons : they are high for small-scale farming, they are strongly saline, and they are heavy and require much preparation before sowing. Agricultural pump schemes have been officially discouraged in the past chiefly because of the high salinity and other undesirable features of the soil, but the fact that they can be profitably utilised is shown by a successful 4,000 feddan farm to the east of Khartoum North, which has been in operation for some fifty years. Properly managed there is no reason why much of the similar land in the district should not be agriculturally developed, particularly with the large market of the Three Towns and the railway so near at hand. Their flatness is of great advantage since little preparatory levelling is required before the land is irrigated. On the other hand, their flatness as well as the heaviness of their texture are unfavourable characteristics for building sites. Flatness is a depressing characteristic in towns, especially where it is associated with straight roads and rectangular blocks such as occur in this district, and in addition there is the added disadvantage of liability to flooding such as occurred in Khartoum South in 1954. Clay soils are notoriously bad for foundations, but in this district the clays are particularly bad as they are sodium-rich and have a high coefficient of swelling. Foundations must be put at least three feet down to be sure of getting below the zone of annual swelling and shrinking, and the danger resulting from flooding such as may occur when gardens are irrigated can be a serious hazard to houses on this kind of land. All these high-level clays have a top horizon of sandy soil, usually about a foot thick, and it would appear a good proposition to "raft" houses on this, rather than risk foundations in the clay.

Some sandy soils occur at the same high level, especially south and south-west of Khartoum (Map 3), and are already much built over. These are in part artificially created for they consist of wind-blown sands which have lodged against projections. This drift of sand has been made use of by the Forestry Department which has set up fences to trap sand which forms a satisfac ory bed for tree growth, and the trees themselves when grown trap more sand. These fenced areas are of considerable interest for they are producing a different vegetation and soil from that occurring in unprotected areas, and thick unirrigated mesquite-acacia forests are forming. These were intended to reduce soil erosion and consequently dust blowing around the towns. Such green belts are a result of the recommendations made in the Report of the Committee on Soil Conservation (1944) for these as well as other towns in the Sudan. Because of their amenity-value in providing open green areas for the town dwellers, it is to be hoped that these areas will be retained, their fences made more efficient, and their extent increased where possible to form a complete belt. Unfortunately their future is not certain and already a part has been given up for the building purposes. The agriculturalist, however, has no interest in these sandy soils, for they are uneven in surface, are poor in plant nutrients, and have a poor water-holding capacity.

To the west of the rivers in the vicinity of Omdurman occur soils of a similar low agricultural value. They are reddish sandy soils lying on a gravel or stone bed, and although fairly level, they are much cut by khors. The most sandy variety which occurs to the north-west is agriculturally useless, but those further south and west

contain rather more silt and clay. For a number of reasons, however, including their light texture and thinness and their height above the river, they do not appear to have any immediate agricultural future.

There remain only the sloping lands to be considered. These are most extensive on the Omdurman side of the river where they include part of Omdurman itself and the borders of several khors, in particular Khor Abu Anga. They are stony, eroding slopes, exposing in many places the bare rock of the Nubian Series. They have no agricultural value and their chief interest lies in the fact that they are slowly eating back and increasing the eroded area. They are unsightly lands, and on both aesthetic and economic grounds it would be desirable to cover them. As building sites they have certain objections, for some would require a good deal of levelling, and river silt would have to be transported to make gardens possible (as is already done in Omdurman), but otherwise they could be attractive housing estates. Alternatively, they be forested with acacia trees, but this would be an expensive procedure as it would involve preparing individual sites for the trees and watering them until they were established.

Sloping ground also occurs on the banks of the Blue Nile, particularly on the west bank, and is partly covered with villages such as Burri. These are fair quality soils in themselves but are subject to erosion, and not being flat they would require a good deal of preparation before they could be irrigated. It seems probable that unless plans are made to the contrary the building expansion of the future will link up the riverside villages into one long narrow suburb of Khartoum. As an alternative, these sloping areas could be forested, for it should not be difficult to establish trees on these soils, and it would be advisable to fence these plantations and other areas near the towns threatened with encroachment. By so doing the natural vegetation can become established and dust-blowing checked while the future of the land is being decided.

It would be a pity if the Three Towns, which have the great amenity of three large rivers running through them, should be allowed to grow to an uncomfortably large size, as has occurred in some other African towns. Fortunately the Government holds most of the land and there is a Town Planning Department which has positive ideas and plans for the development of the towns, and is very conscious of the need for open spaces, control of sprawl, etc. ; and it is to be hoped that its policy will not be overridden by mercenary demands. It is also to be hoped that care will be taken not to use up good agricultural land, especially the riverside lands, while there is plenty of poor or useless land available for building. Not all householders are gardeners, and in any case the chief attribute of a garden in this climate is the shade produced by the trees, which can be fairly easily established in most places, so that the objection to poor soils for building houses on is not a very strong one. By developing the poor sloping and sandy lands for building, the flat clay lands may be retained for an agricultural future which is almost certainly waiting for them.

Acknowledgements

The writer is grateful for the information which was kindly provided by the Director of Forests and by the Town Planning Officer.

(A) SOIL MOISTURE (PER CENT OVER DRY SOIL)

	Depth in inches							
	6	12	24	36	48	60	72	
High Level Dark Clays	9·2	12·2	14·5	14·4	11·3	9·6	9·3	Average of 21
High Level Sands	3·9	5·2	6·7	8·0	9·7	8·8	—	Average of 3
Riverain B.N. and M.N.	5·1	7·6	9·3	10·1	11·3	12·7	11·2	Average of 6
Riverain W.N.	5·3	6·4	8·6	8·6	4·0	—	—	Average of 3
Red Sand-Ironstone	7·3	5·8	4·7	3·8	5·8	4·0	—	Average of 6

(B) SOLUBLE SALTS (PER CENT)

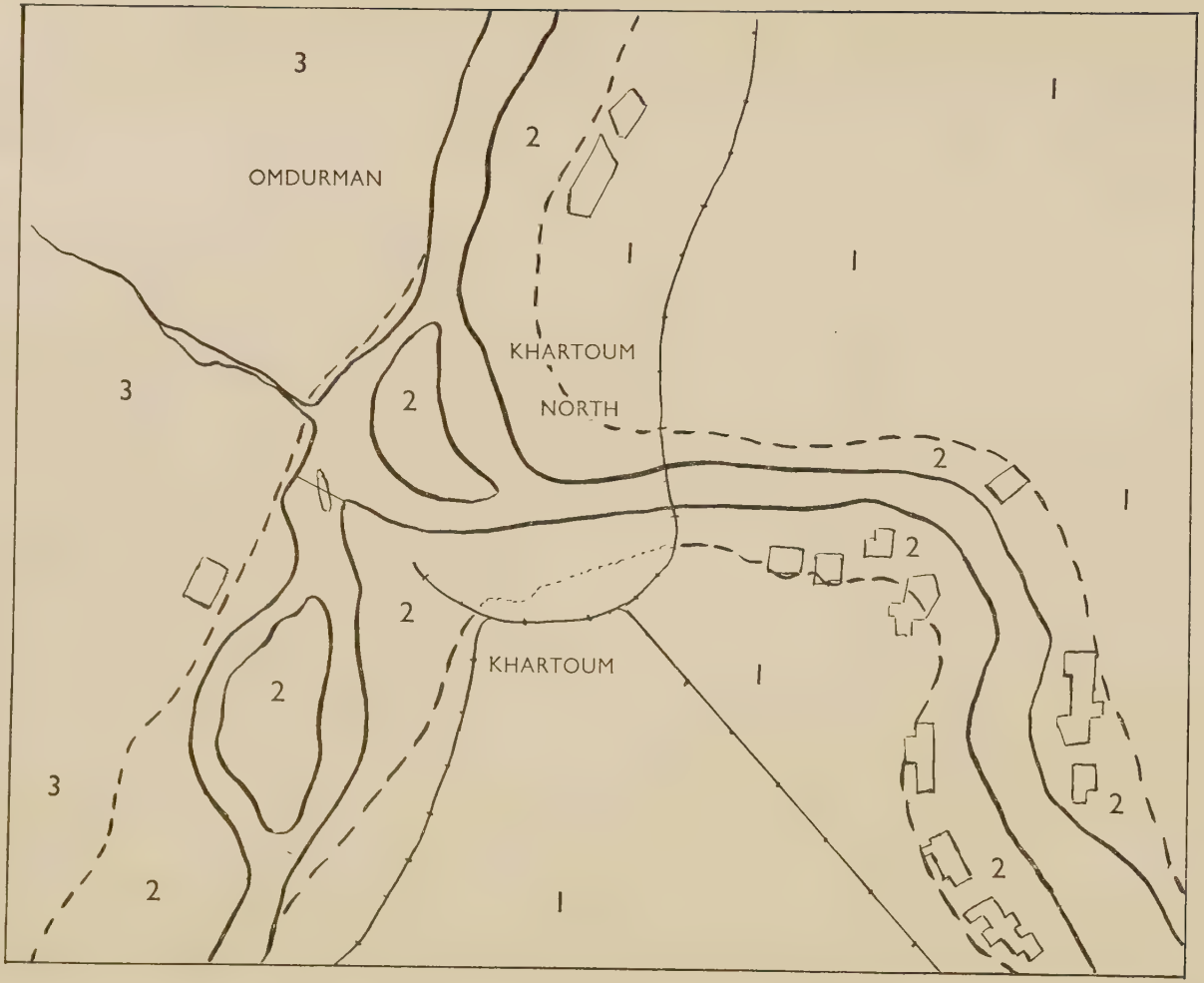
	Depth in Inches							
	0–6	6–12	12–24	24–36	36–48	48–60	60–72	
High Level Dark Clays	0·20	0·55	0·84	0·74	0·66	0·52	0·44	Average of 27
High Level Sands	0·042	0·040	0·028	0·036	0·040	0·038	0·035	Average of 5
Riverain B.N. and M.N.	0·01	0·31	0·22	0·20	0·21	0·20	0·17	Average of 14
Riverain W.N.	0·09	0·12	0·22	0·25	0·23	0·21	0·13	Average of 4
Red Sand-Ironstone	0·023	0·020	0·015	0·018	0·017	0·042	—	Average of 7

TABLE I. (*Continued opposite*)

(C) SODIUM (Milligram Equivalents Per Cent)

	Depth in Inches							
	0–6	6–12	12–24	24–36	36–48	48–60	60–72	
High Level Dark Clays	7·6	17·8	24·8	27·1	23·8	19·3	18·9	Average of 17
Riverain B.N. and M.N.	8·9	19·6	21·2	21·0	21·3	18·8	18·9	Average of 7
Riverain W.N.	2·7	4·5	5·9	6·8	5·7	4·4	4·3	Average of 3
Red Sand-Ironstone	3·7	4·8	5·1	6·4	6·9	3·9	1·3	Average of 4

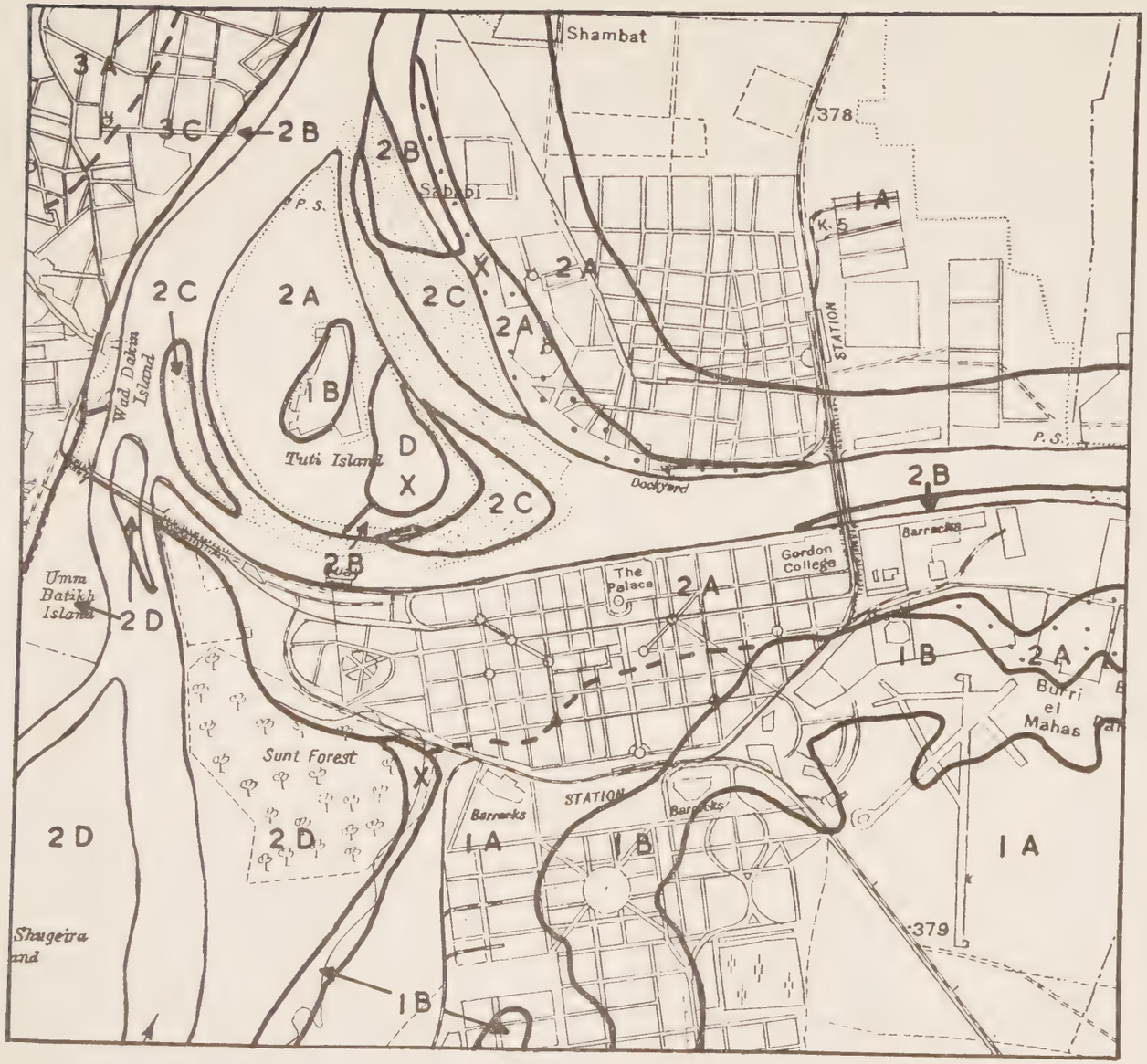
Table 1. Mean Values for Moisture, Soluble Salts and Sodium in the profile of the main Soil Groups.



Legend

1. HIGH LEVEL SOILS
2. RIVERAIN SOILS
3. NUBIAN SERIES SOILS

MAP 1. Map of the Three Towns and surrounding land, showing boundaries of the main soil groups.



Legend

1A. High Level Dark Clays.

1B. High Level Sands.

2A. Silts/Silty Clays of Blue Nile and Main Nile.

2B. River Silts.

2C. River Sands.

2D. White Nile Clays.

3A. Red Sand—Ironstone Soil.

3B. Pea Iron Gravel Soil (Not shown).

3C. Eroding Nubian Sandstone Soil.

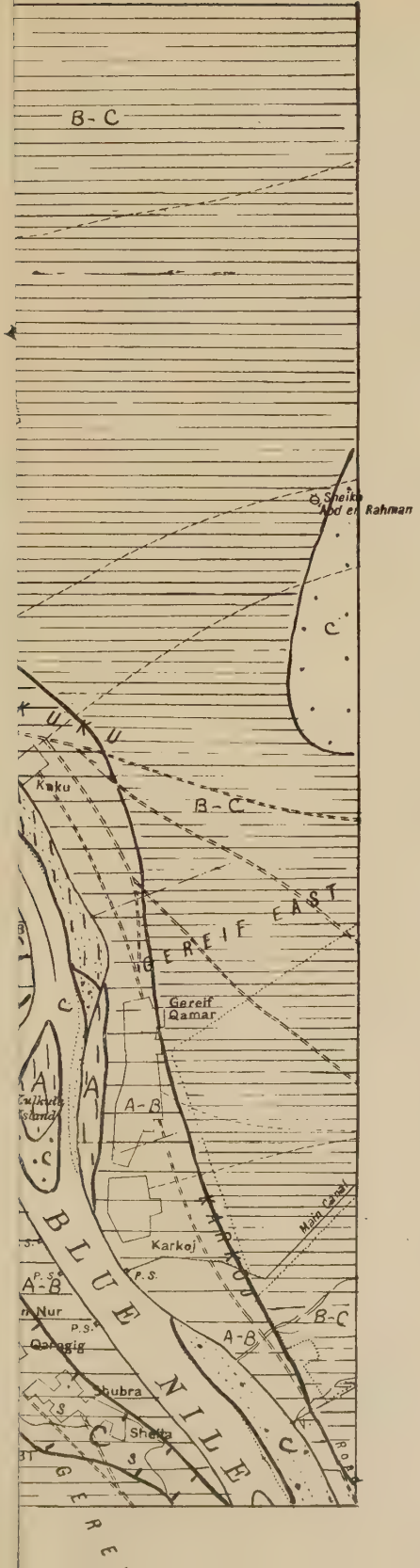
X. Light coloured areas with tree growth, often associated with sandy soil.

D. Dunes.

Areas with erosion.

Map 2.

Sketch-Map of Soils in the Central Part of the District.



HIGH LEVEL DARK CLAYS.

SILTS AND SILTY CLAYS.

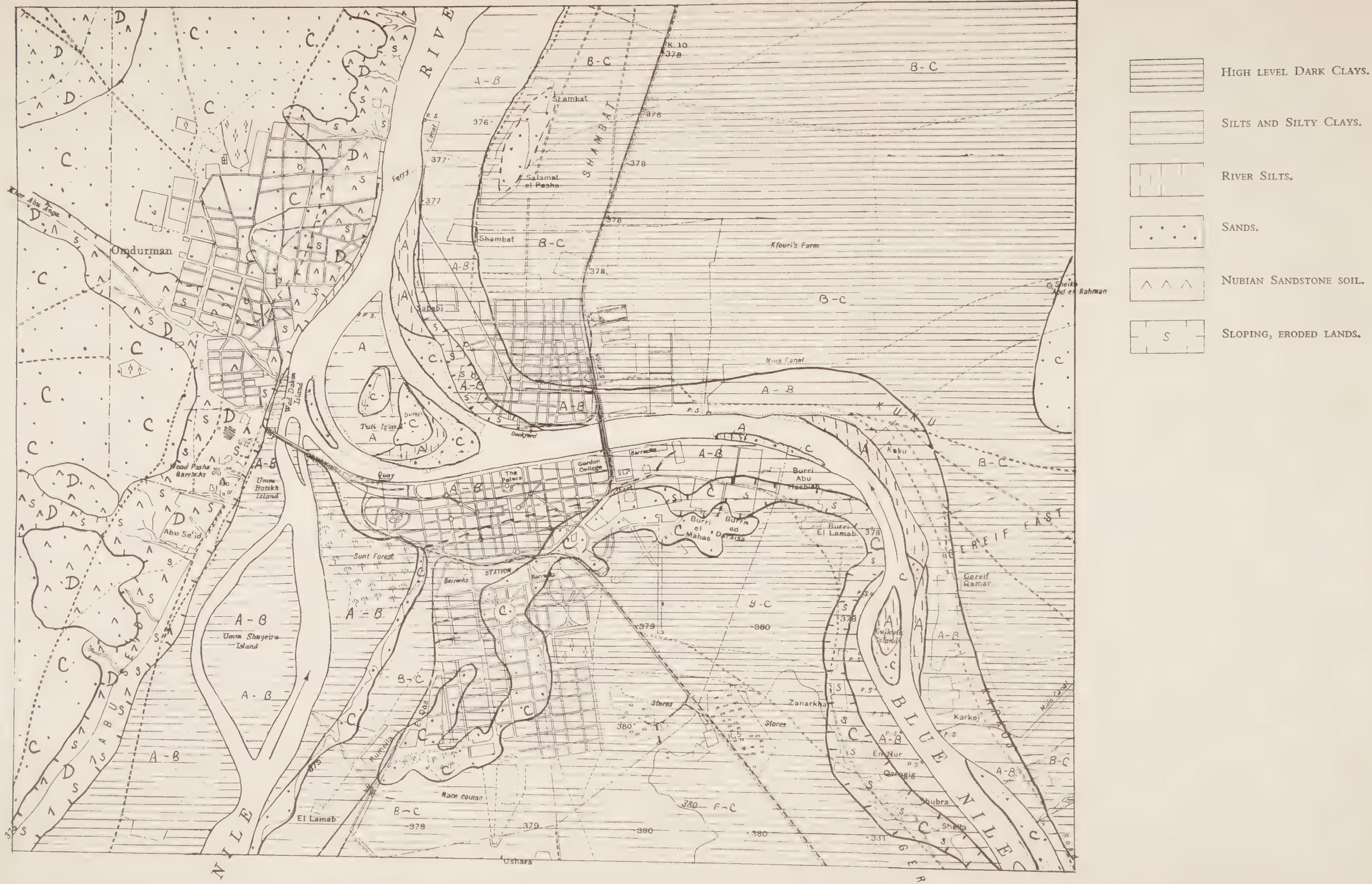
RIVER SILTS.

SANDS.

NUBIAN SANDSTONE SOIL.

S

SLOPING, ERODED LANDS.



MAP 3. Agricultural Value of Land in the Vicinity of the Three Towns.

MEDICAL ENTOMOLOGY IN THE SUDAN REPUBLIC

by

D. J. Lewis

By 1955 a very large number of publications had appeared which dealt partly or wholly with Diptera of medical importance in the Sudan. A guide to this literature, and to that on Hemiptera and Coleoptera, is provided here by references to recent papers from which older works can be traced. The greater part of this paper deals with other groups of insects and other arthropods, and it is presented as a source of information about the multitude of species which come to the attention of a medical entomologist in a large area of Africa which ranges from rain forest in the south to desert in the north.

Between 1770 and 1900 many travellers and explorers recorded both their own observations on natural history and reports which they received from local inhabitants, and so assembled a body of information which was a useful background for future scientific studies. In 1905 the first entomologist in the Sudan was appointed to the Wellcome Research Laboratories at Khartoum, and he built up a large collection of biting insects, with numerous records of distribution and behaviour, which in due course was augmented by the staff of the Department of Agriculture and Forests and by many contributors in remote parts of the country. In 1936 a section of Medical Entomology was established and from 1938 onwards it was located at the Gezira Research Farm, Wad Medani. In 1940 it became part of the Medical Research Laboratories, Khartoum, but continued to enjoy the facilities at Wad Medani where conditions were more suitable for field work than at Khartoum.

The initials in brackets after certain records are those of collectors whose names appear in the section on acknowledgements.

COLLEMBOLA

A species of *Lepidocyrtinus* has been reported to bite man at Meridi and is one of several Collembola which have been accused of doing so (Busvine, 1951) although they cannot pierce the skin.

ORTHOPTERA

The Sudan is part of the arid region in which certain cockroaches and crickets probably adopted domestic habits. De Martonne (1927, p. 1423) noted that certain domestic cockroaches lived out of doors in the North African desert; Uvarov (1921) discussed the probable original home of *Acheta domestica* (L.) in south-west Asia or North Africa, and Chopard and Kevan (1954) observed the beginning of a domestic association in this species in open country south-east of Ethiopia. One species of cockroach and several crickets live both in and out of doors in the Sudan.

Blattidae

Supella supellectilium (Serville), which is figured by Pope (1953), is a tropicopolitan cockroach which has spread rapidly in temperate regions (Chopard, 1943; Herms, 1950; Matheson, 1950; Hafez and Afifi, 1956). It is known in the Sudan from Bahr el Jebel (Werner, 1913), Gandeto, Khartoum, Jebel Moya, Port Sudan (Ebner, 1925), Tokar, Torit and Wad Medani, and is often very common in houses. Cottam (1922) found it in nearly all buildings in gardens at Khartoum and observed that it bred throughout the year, was nocturnal and often flew round lights indoors, and that its eggs were parasitized by Hymenoptera. *Periplaneta americana* (L.) has been found at

Bouga, Gedaref, Omdurman (where it was the only common insect, other than fly larvae, in pit latrines) and Wadi Halfa (septic tank), and in river steamers. *Shelfordiella tartara* Saussure is often found out of doors and is known from Delami, Khartoum (a few records from houses), Miseiktab and El Obeid (in a train and in luggage). The nearly cosmopolitan *Blatella germanica* L. is recorded from Khartoum, Latuke and Trinkitat.

GRYLLIDAE

Acheta domestica is largely an outdoor species in the Sudan, where it is known from Khor Arbaat, Bara, Gandeto, Gemelab, Kassala, Khartoum (var. *meridionalis* Uvarov, 1921), El Obeid, Port Sudan, Sennar, Shambat, Shendi, Tokar, Umm Inderaba, Wad en Nau, Wad Medani (Chopard, 1936) and Zeidab. Three other crickets are sometimes found in houses. *A. brunneri* Saussure was seen to enter a house at Wad Medani in December ; *A. chudeaui* Chopard, a Saharan desert form (Chopard, 1943), is known from Khor Arbaat, Manaqil (house), Umm Inderaba and Wad Medani ; and *Gryllodes sigillatus* (Walker), a cosmotropical species according to Chopard and Kevan (1954), is recorded from Khor Arbaat, Kassala, Khartoum (once in house) and Talodi.

ISOPTERA

Certain ants (Hinman, 1933) and beetles (Herms, 1939) have been used for suturing small wounds in some countries, the insects being allowed to bite the wound, after which the neck was severed. Soldiers of *Macrotermes bellicosus* Smeathman have been used in this way at Li Rangu (P.H.A.).

MALLOPHAGA

The biting lice, some Sudan records of which have been published by Kellog and Paine (1911) and Mjöberg (1911), include several pests of domestic poultry and mammals (Herms, 1950). *Gliricola porcelli* (Schrank) and *Gyropus ovalis* Burmeister, parasites of the guinea-pig (Hopkins and Clay, 1952), have been taken on this animal at Wad Medani, and *Menacanthus stramineus* (Nitzsch) was found on a turkey there.

ANOPLURA

The following species have been found in the Sudan : *Haematopinus asini* (L.) at Khor Atar, Kosti, Singa and an unspecified locality (Ferris, 1933) ; *H. bufali* (Degeer) at Meshra Malawi ; *H. tuberculatus* (Burmeister) on a camel at Khartoum ; *Hoplopleura* sp., possibly *oenomydis* Ferris, on rats at Yei ; *Polyplax* sp. on rats at Wad Medani ; *Linognathus africanus* Kellog and Paine on sheep and goats at Wad Medani and Kassala (Ferris, 1951) respectively ; *L. setosus* (von Olfers) on a dog at Khartoum ; *Pediculus humanus* L. at many places ; and *Phthirus pubis* L. in several areas, sometimes on people's eyelashes. Louse-borne relapsing fever was often introduced into the country (Kirk, 1939) and became a serious problem until in 1945 DDT was used on a large scale by the Public Health Department. Epidemic, louse-borne typhus once reached the Sudan from Egypt but de-lousing operations prevented it from spreading (Pratt and others, 1949).

ODONATA

During studies, already reported, on mosquitos in relation to yellow fever in the Nuba Mountains, nymphs of *Crocothemis erythraea* Brullé, a widespread species (Pinhey, 1951), were found in rock pools where they almost certainly killed many larvae of *Aëdes vittatus* Bigot.

EPHEMEROPTERA

Large may-flies are among the insects which sometimes emerge from the Blue Nile in vast numbers at Singa, Wad Medani and Khartoum (*Polymitarcis savignyi* Pict.).

HEMIPTERA

Several plant-sucking bugs cause annoyance by piercing the skin, probably in search of moisture, and these and other species have been discussed by Lewis (1958*a*).

TRICHOPTERA

According to Weber (1942) caddis flies can cause great annoyance in the Sudd region by coming to light in large numbers. They are sometimes common at Khartoum and were annoying in river-side houses at Atbara in April, 1950.

LEPIDOPTERA

An urticating Limacodid larva has been found at Li Rangu.

Adults of the Agrotid genus *Arcyophora* have been found to feed on secretions from the eyes of animals in the Sudan and elsewhere and have been suspected of transmitting ophthalmia from one to another (Reid, 1954). *A. patricula* Hampson was observed at Abri near Heiban on 8th July, 1941 between 10.30 and 11 p.m., several of the moths flying round a horse's head and drinking from its eyes although wet mud provided a possible source of moisture nearby.

COLEOPTERA

Blister beetles, scavenging beetles and other species of medical interest were discussed by Lewis (1958*b*).

HYMENOPTERA

CHALCIDOIDEA

Parasites found in species of *Simulium*, *Tabanus* and *Sarcophaga* in the Sudan have been recorded in papers on the Diptera.

CHRYSIDIDAE

The conspicuous green "cuckoo wasps", *Chrysis stilboides* Spinola (recorded from the Kosti area by Morice and Szepligeti, 1901) and *Stilbum cyanurum* Forster, often enter houses and are sometimes received for identification. The Chrysidids do not sting, with the exception of one genus which is not found in the Sudan (Imms, 1951).

EUMENIDAE

Eumenes maxillosus Degeer, a very common species in tropical Africa (Grassé, 1951), often enters unscreened buildings in the Sudan and builds its mud nests in them.

VESPIDAE

Belonogaster junceus (Fabricius), which is figured in colour by Bequaert (1918), is widely distributed in tropical Africa (Bequaert, 1918; Schulthess, 1927; Bischoff, 1929) and can inflict a painful sting (Von Schmidt, 1949). It is found in the central Sudan and is common in the south where it often nests in houses so that people

frequently disturb it inadvertently and are stung. *B. griseus* (Fab.) is also said to sting, but no other wasps are known to do so in the Sudan although two other species of *Belonogaster* occur and species of *Polistes* are sometimes found in houses.

APIDAE

The stingless "sweat bees" or "eye bees" found in the Sudan belong to the genus *Trigona* and, according to Imms (1951), nest in hollow trees, rocks or walls and produce colonies which include enormous numbers of often minute individuals with a vestigial sting. Carpenter (1925) considered that a stingless bee in Uganda was attracted to sweat in the dry season, but the need for moisture is not the only reason why the bees molest people, if indeed it is a cause at all. Schwarz (1948) gave many instances of stingless bees annoying people near their nests, probably as a means of defence, and Lewis (1956) noticed *Trigona* crawling on skin at a place in Sierra Leone where water was abundant. In the Sudan stingless bees have been reported to annoy people in some wooded parts of the south and on Jebel Marra. Theobald (1906) reported enormous numbers, near some large trees in the Bahr el Ghazal Province, which caused much irritation by entering eyes, ears and nose, and emitted a strong odour when crushed. A nest with tubular openings was seen seven feet from the ground in one of the trees. Butler (1908) reported on eye bees in the same area, Christy (1917) wrote of the "little torment" on the east side of Mount Bangenze and in many other places, Lynes (1921, p. 130) recorded eye bees on Jebel Marra, and Dr. K. Abdel Rahman reported that they were numerous near Li Yubu. The present writer encountered *Trigona braunsi* Kohl. near Aweil, where the bees were intensely annoying and so numerous that parts of one's skin were almost hidden by them and it was impossible to take food without eating bees. A grass fire drove most of them off. *T. gribodoi* Magretti was seen to enter a man's ear at Mvolo, and a species related to *T. transvaalensis* Cameron settled on human skin at Kalokitting.

People are often stung by honey-bees which are attracted to water bags in dry weather. Plate-layers on the railway near Qala en Nahl (the "hill of bees") are sometimes compelled to stop work, and bees have also been troublesome at Jebel Ahmed Agha (Chapman, 1921), Doka (Hayes, 1905) and in the south (Tothill, 1948, p. 153). Titherington (1939) reported that in the south people were sometimes killed by bees attracted by water, and mentioned the value of smoke in driving them off.

FORMICIDAE

A large and well-developed sting is present in the females and workers of the sub-families Ponerinae, Dorylinae and Myrmicinae (Imms, 1951); some species of Myrmicinae bite (Patton and Evans, 1929); and some of the Formicinae squirt poison into the wound made by their mandibles (Busvine, 1951). Some ants frequent houses and may contaminate food, according to Busvine who discusses control measures.

PONERINAE

Euponera (*Brachyponera*) *sennaarensis* (Mayr) is widely distributed in Africa (Weber, 1943) and is very common in many parts of the Sudan (Weber, 1940*a*). It is known from Wad Medani and from localities recorded by Mayr (1904), Viehmeyer (1923) and Weber. According to Mayr this ant probably feeds chiefly on insects and destroys many termites but will collect grass seeds and bread crumbs, and Wheeler (1922) reports that it stings fiercely in the Belgian Congo. At Wad Medani it has been seen killing house-fly larvae in a compost pit, and sometimes enters houses. Winged specimens occasionally penetrate clothing and inflict numerous stings which are at first painful and then irritating.

Ponera sulcatinasis ssp. *durbanensis* Forel has sometimes been found at Jokau, flying and stinging in the late afternoon and causing much irritation (G.S.R.). *Messor barbarus* L. is a large black ant which makes low mounds in gardens and will remove millet grains from granaries (King, 1911). Winged individuals occasionally sting out of doors.

DORYLINAE

The Dorylinae, which include the driver ants, build no permanent nests and wander at night or on sunless days (Imms, 1951). *Dorylus nigricans* Illiger, including its varieties, is the common fierce driver ant. It has been recorded from the Sudan by Mayr (1904) and Weber (1940*a*, 1943) and occurs at Li Rangu and many other places in the south. *D. fulvus* (Westwood) occurs at Kassala, Khartoum and Wad Medani, but is not known to sting ; *D. affinis* Shuck was found at Suni, and a variety of it at Sennar (Viehmeyer, 1923) ; and two other species have been recorded from the Sudan by Mayr. According to Evans-Pritchard (1940) red soldier ants occasionally infest Nuer cattle byres so that the animals have to be removed while the floors are sprinkled with ashes. The large males of several species of *Dorylus* come to lights in many places and are commonly known as sausage flies.

FORMICINAE

Prenolepis longicornis Latreille, a long-legged black cosmopolitan species which invades houses (Patton, 1931), has been found in a steamer on the Nile (Weber, 1940*b*) and at Khartoum and Port Sudan. *Camponotus maculatus* (Fabr.), which has a basic yellowish brown colour, an infuscated head and dark patches on the thorax and gaster (Weber, 1942), is common in the Sudan and is known as the sugar ant. Weber has recorded it or its variety *aegyptiacus* Emery (a pale form found mainly in the drier areas) from several places, and additional localities are Debba, Gheibisha, Golid, Kosti, Meridi, Torit and Wad Medani. *Paratrechina longicornis* Latr. has been seen killing larvae of Sarcophagid flies at Dueim.

MYRMICINAE

Weber (1943) recorded sub-species of the tropicopolitan *Pheidole megacephala* (Fabr.) from the Sudan, and Chalmers (1919) recorded a Myrmicine biting people at Khartoum. *Monomorium pharaonis* L., a very small yellow cosmopolitan species (Patton 1931), which can penetrate all over buildings (Busvine, 1951), has been found on food in a steamer (Weber, 1940*b*).

BETHYLIDAE

Mandoul and others (1950), Asahinas (1953) and Lewis (1956) have published reports of severe stinging, indoors, by species of *Scleroderma* in Algeria, Japan and Sierra Leone. In May 1942, a species of this genus was found at Muklei in the eastern Sudan, where it had not been noticed before. The minute wasps were running about, looking like small ants, and attracted attention by their attitude when they attacked. They assumed a vertical position, perhaps biting as well as stinging, and produced an unpleasant and peculiar irritation.

DIPTERA

The numerous papers on Diptera of medical importance in the Sudan can be located by reference to Lewis (1958*c*).

SIPHONAPTERA

In 1911 Bousfield reported that, as far as he knew, fleas were scarcely ever seen in the Sudan, and the present writer, who spent twenty years in the country and travelled extensively, never encountered them inadvertently, although on one occasion, at Dunger, *Ctenocephalides felis strongylus* (Jordan) was found when dung was disturbed in a search for other insects. Hirst (1927) discussed the absence of plague in the Sudan and considered that the dry climate was probably a reason but not the only one because the disease sometimes occurred in the very dry region of Upper Egypt. He (1953, p. 32) referred to the Sudan as an example of a country which was free of plague, despite the presence of *Xenopsylla cheopis* (Rothschild) on rats, probably owing to very low rat and rat-flea densities combined with exceptional heat and dryness of the a r during the greater part of the year. A case of bubonic plague was reported at Suakin in 1921, for the first time in more than thirty years, and another case occurred in a ship at Port Sudan in 1929. The annual medical reports for several subsequent years contain records of fleas and rat control in the port.

Tunga penetrans (L.), which was introduced from America into Africa in 1872, appeared in Uganda in 1891 and reached the east coast in 1899 according to Cook (1901). Balfour at first (1904) had no information of its existence in the Sudan but later (1906*b*) reported it from the Bahr el Ghazal Province. In a hand-book of this area published in 1911 jiggers were stated to be very common in the southern districts where they were called *tuk-tuk* and were believed to have been introduced by African soldiers from the Belgian Congo. Anderson (1911) referred to the arrival of jiggers at Meridi and other Belgian outposts, and to their spread along the main roads to many other places, and mentioned that the people ruptured or extracted the parasites and applied wood-ash to the affected parts. If they had been accustomed to these fleas they would doubtless have removed them whole. It is said that jiggers were taken to Katire by labourers about 1942. Now, as far as we know, *T. penetrans* exist mainly in high country in the far south, in places such as Aloma, Boma, Katire and Nagishot. It sometimes appears and flourishes, apparently temporarily, at southern lowland places such as Daga, Jokau and Kigille. Records from Li Rangu, Tembura, Tivora, Yambio and Yei were probably due to such temporary invasions. A jigger was once found, in April, in a steamer at Jebelein, on a traveller who had left Nagishot thirteen days before, and it is likely that individual jiggers often reach such northern localities but fail to survive.

Echidnophaga gallinacea (Westwood), a cosmopolitan species (Hopkins, 1947), has been found at Loka (on cat), Nagishot (on fowls), Pongo (Hopkins and Rothschild, 1953), Singa (on fox) and Yei.

Pulex irritans L. is often said to be cosmopolitan but is absent or rare in many of the hotter parts of the world. It was found in 1909 at Atbara and in the Gezira, and probably is, or was, a rare visitor to the Sudan. It has been found, however, in neighbouring hilly country, at Nacfa in Eritrea and at Maji in Ethiopia.

Hopkins and Rothschild (1953) have recorded *Ctenocephalides felis felis* (Bouché) and *C. f. strongylus* (Jordan) from various parts of the Sudan and pointed out that the former has spread with the domestic cat, and that some African specimens, possibly hybrids between it and the indigenous *C. f. strongylus*, are intermediate in appearance. Additional records of *C. f. felis* are from Khartoum (lynx) and Port Sudan (rat and dog), and of *C. f. strongylus* from Adok, Dunger, Gedaref, Khartoum, Kodi, Li Rangu (dog), Malakal, Singa (fox burrow), Terakekka, Wad Medani (dog) and Wau. Dunger is a village in the Nuba Hills near Heiban and the fleas were found in a hut used as a

stable for cattle, a type of site which does not exist in vast areas of the country where cattle are kept out of doors and taken north each year to protect them from biting flies. Some dung in a hole in the mud floor was disturbed and scores of fleas emerged and jumped onto the writer's legs but caused little irritation. *C. canis* (Curtis) has been found at Maji in Ethiopia but probably does not exist in the Sudan, despite Archibald's (1923) record of it from the Blue Nile area ; Hopkins and Rothschild (1953) state that this species has not become widely established and many of the records from Ethiopian Region refer to *C. f. strongylus*.

A species of *Parapulex*, possibly *chephrenis* (Roths.), was found on an oiled-paper sandfly trap at Homra near Gedaref.

Synosternus pallidus (Taschenberg) has been recorded from eight places in the Sudan by Hopkins and Rothschild (1953) who point out that it is a desert species not characteristic of any particular zoogeographical region. Additional localities are Dueim (hedgehog), Khartoum (fox, dog and cat), El Obeid (Fulmek, 1928), Singa (fox burrow) and Wad Medani (ground squirrel and mongoose). Many fleas of this species could often be seen jumping about in the mouths of ground-squirrel burrows on the outskirts of Wad Medani, and a collection of these was found to comprise forty-one males and forty-eight females. *S. cleopatrae* (Roths.), like *P. chephrenis* and *S. pallidus*, is a desert species, according to Hopkins and Rothschild (1953) who record it from Kerma, Khartoum and Shendi.

They consider that a Nilotic strain of *Xenopsylla cheopis*, which occurs on field-rats as well as on house-rats in the Sudan, has spread, mainly up the Nile valley, by natural means. They record it from several parts of the Sudan, including the type locality near Shendi ; and some additional localities are Dilling (Fulmek, 1928), Malakal, El Obeid (Fulmek, 1928), Shambat, Suakin, Wad Medani and Yei. Gerbils are the principal hosts of *X. nubica* (Roths.) which requires dryer conditions than *X. cheopis* according to Hopkins (1949). It is recorded from several parts of the Sudan by Hopkins and Rothschild (1953) and occurs in the Gash Delta. They also give several localities for *X. nilotica* (Jordan and Rothschild) which is only known from the Sudan and occurs mainly on jerbils.

Lagaropsylla hoogstraali was described by Smit (1957) from specimens taken on a bat at Torit.

Dinopsyllus lypusus (Jordan and Rothschild) is a montane species in Uganda (Hopkins, 1949), and Jordan (1925) gave Jebel Marra as the first record of this genus and species north of that country. *Nosopsyllus fasciatus* (Bosc.), the European rat flea, has been recorded from one Sudan locality by Buxton (1941) and there is an unconfirmed reference to it from Port Sudan in the Annual Report of the Medical Service for 1927. A flea from Jebel Marra was recorded (Jordan, 1925) as *N. henleyi* (Roths.), but there is some doubt about the determination. Mr. G. H. E. Hopkins informs me that *N. maurus* (J. and R.) has been found at Suakin.

As far as is known at present, some of the fleas found in the Sudan can be grouped as follows according to their distribution. *C. f. strongylus* is an Ethiopian form widely distributed in the country. *D. lypusus* is an Ethiopian montane species whose Sudan locality shows great discontinuity of distribution. *X. nilotica* appears to be confined to the Sudan. *S. pallidus*, *S. cleopatrae* and, probably, the *Parapulex* are desert species, and *X. nubica* is a species of rather dry country. Six forms are widely distributed in other parts of the world, of which *E. gallinacea*, *C. f. felis* and *X. cheopis* have spread widely in the Sudan, *T. penetrans* exists on the extreme southern edge, and *P. irritans* and *N. fasciatus* are unable to establish themselves.

OTHER ARTHROPODA

CRUSTACEA

Ekman (1904) recorded *Cyclops leuckarti* Sars, one of the intermediate hosts of the guinea-worm, from the Sudan, and Wenyon (1908) reported that this disease was common at Wau, and infected Cyclops there. Guinea-worm infection was found in patches in most of the southern Sudan except the Zande district and the far west (Cruickshank, 1936), and, according to medical reports, was a common cause of incapacity in many areas with permanent pools and shallow wells, and occurred around Dilling, Gallabat and a few other northern localities.

MYRIAPODA : CHILOPODA

Kraepelin (1904) and Attems (1909) recorded species of centipedes from the Sudan and Flower found *Scolopendra morsitans* L. near Melut. Only one report has been received of a centipede stinging in the Sudan, from Wau, where one, 55 mm. long, stung a boy between the first two toes causing pain at the site and along the inner aspect of the thigh along which urticaria was observed.

MYRIAPODA : DIPLOPODA

Many millipedes can exude an injurious fluid (Burtt, 1947) which has an almond-like smell in some species (Cloudley-Thompson, 1952). Large millipedes are common in the south, and, although they have not been seen to exude fluid, Dr. S. G. Willimot informs me that a millipede at Yambio smelt like prussic acid when it was crushed.

ARACHNIDA : SCORPIONIDEA

Twenty-five species of scorpions were recorded from the Sudan by Birula (1908, 1915, 1928), Borelli (1929), Flower (1900), Gough (1927), Hemprich and Ehrenfeld (1929), Hirst (1911), King (1925), Kraepelin (1899), Pocock (1895), Shaw (1933), Simon (1910), Tullgren (1909), Vachon (1952), Werner (1911), and Whittick (1947), but the names given may only represent twenty species, according to Vachon (1955). In recent years collections have been assembled by Mr. A. A. El Sayed of the Sudan Government Natural History Museum and the present writer and sent to Dr. Max Vachon who kindly agreed to examine them. In a preliminary report (1955) he notes that fourteen genera are represented and that the relatively small Ethiopian element is mingled with the large Sahara-Sindian group of genera, although in north-west Africa there is a sharp dividing line between these groups. The commonest species are *Androctonus amoreuxi* (Audouin), *Leiurus quinqestriatus* H. and E., *Compsobuthus werneri* (Birula) and *Buthotus minax* L. Koch.

Scorpions are common in the north and scarce along the Nile-Congo divide where they are said to disappear when one enters areas infested by jigger fleas. During the dry season many scorpions are believed to live in cracks in the ground, and at Wad Medani *B. minax* was seen to emerge from one of these cracks which was artificially flooded. During the rainy season many enter houses, and some have been found in cracks in telephone poles and eleven in a crow's nest on one of these poles. Hasseeb (1951) and Hallam (1954) referred to observations on *L. quinquestriatus* in Khartoum. Bray (1904), Wilson (1904), Balfour and Archibald (1908), and Shibeika (1953) reported the effect of scorpion stings which caused a number of deaths in children.

ARACHNIDA : ARANEIDA

Latrodectus geometricus C. L. Koch, which belongs to the same genus as the American Black Widow spider, is widely distributed in the world and is known to be able to inflict painful bites in South Africa (De Meillon and Gear, 1947). It has been

recorded from Khartoum by Simon (1884) and from Kororak by Reimoser (1928), but has not been reported to bite people in the Sudan, probably because it does not happen to occur in places where people sit.

ARACHNIDA : ACARINA

The principal works dealing with mites and ticks in the Sudan are those of Trägårdh (1905), Nordenskiöld (1905), Hoogstraal (1954, 1956) and Zumpt and Patterson (1951), and many papers listed by Hoogstraal, and some papers referring to mites in the reports of the Wellcome Tropical Laboratories. The following are a few species of medical or veterinary interest.

MESOSTIGMATA : LAELAPTIDAE

Ornithonyssus bursa (Berlese), the tropical fowl mite, is widely distributed in tropical and subtropical regions (Keegan, 1956), occurs on various birds, and has been reported to bite man (Herms, 1950 ; Baker and others, 1956) and to cause dermatitis in South Africa and some other areas (Zumpt and Graf, 1950). In the Sudan specimens found attacking people, usually in the rains, have been received from public health inspectors and others at Dilling, Kadugli, Kigille, Malakal, El Obeid (A. H.), Beriab (A. A. R.) and other villages near Singa, and Wad Medani. The people of Kigille said the mites were troublesome in the rains. At El Obeid they were found in September, on bedding, ceilings and the corners of walls, and reported to cause much annoyance by penetrating among the hairs of the beard and the axillary and pubic regions. At Beriab, during the rainy season of 1954, houses near hen houses, and later the whole village, became infested, and large numbers of the mites were found by day on fences and clothing. They caused much discomfort to children, but many were killed by BHC wettable powder.

A small red mite, *O. aethiopicus* (Hirst) has been found on bats at Singa, Torit and Wad Medani (Keegan, 1956). At Wad Medani many were to be seen on the wings of bats, particularly behind the elbow, and there were occasional complaints of mites, probably of this species, dropping onto people from bat-infested roofs and causing irritation. The blood of many bats was examined, without result, in a search for the cause of a case of typhus (Pratt and others, 1952).

METASTIGMATA : ARGASIDAE

Argas persicus (Oken), which sometimes occurs in huts, is widely distributed in the Sudan and five other species occur there. None of them is known to bite man in that country except two parasites of bats which bit in caves according to Hoogstraal (1956). He listed the few known Sudan records of *Ornithodorus moubata* (Murray), in the extreme south and near Gogrial. The present writer has searched for it in other areas without success. *O. savignyi* (Audouin) is widely distributed and often bites man in the Sudan (Hoogstraal, 1956). The present writer found very large numbers in a brick-walled enclosure near the Wad Medani slaughtering place, where adults collected in half an hour could be measured in gallons and the young nymphs were abundant and were said to bite people.

METASTIGMATA : IXODIDAE

Fifty-four species of hard ticks occur in the Sudan (Hoogstraal, 1956), but although many ticks are often seen on herbage, they are seldom found biting, or crawling on, man. Hoogstraal records *Rhipicephalus sanguineus* (Latreille) and five other species biting human beings. Pratt and others (1949) and Drysdale and Kirk (1952) have discussed two cases of typhus suspected to have been caused by ticks.

PROSTIGMATA : DEMODICIDAE, TROMBIDIIDAE, TROMBICULIDAE, AND SOME WATER-MITES

Demodectic mange is common in cattle in the Sudan, according to Knew (1950).

Dinothrombium tinctorium (L.), a large red velvet mite, appears at Erkowit and other places after rain and attracts attention by its conspicuous appearance.

Few Trombiculid mites have been recorded from tropical Africa (Wharton and Fuller, 1952) except the Belgian Congo where the suspected occurrence of *Rickettsia orientalis* led to a search which yielded many species from small mammals. A species of *Schöngastia*, from a monkey, and other mites from the Sudan were described by Trägårdh (1905) ; and *Trombicula mastomyia* Radford, a parasite of rats in Sierra Leone, was once found on man at Wad Medani.

Aquatic mites are often found on mosquitoes and Chironomids. Various species of water mites have been recorded from the Sudan by Nordenskiöld (1905).

CRYPTOSTIGMATA : SARCOPTIDAE AND PSOROPTIDAE

Sarcoptes scabiei (Degeer) occurs in some areas. Human scabies was common among the Zande (Larken, 1926) was reported from Darfur by Beaton (1948), and, according to medical reports, was rather common in the Shilluk area, especially where people wore more clothes than usual.

According to veterinary reports, outbreaks of camel mange used to occur, and the skin was treated with tar made from melons or the fruit of the higlig tree, *Balanites aegyptiaca* (L.). Other forms of tar used against camel *Sarcoptes* are one made from leaves in North Africa (Sergent and Lheritier, 1919) and a preparation of Pentatomid bugs already considered in a paper on Hemiptera of the Sudan. Equine sarcoptic mange is reported to be very rare but goats are sometimes killed by these mites.

Psoroptic mange was reported from camels in 1935, and has often been a serious disease of working bulls in the Gezira. It is very rare in horses in the Sudan but some specimens of *Psoroptes* were once found on this host at Wad Medani.

ARACHNIDA : PEDIPALPI

These animals are feared in some parts of the world owing to their conspicuous and alarming appearance. They are evidently very scarce in the Sudan, for only one specimen, of *Damon variegatus* (Perty) has been recorded, by Werner (1911).

ARACHNIDA : PSEUDOSORPIONIDEA

Pseudoscorpions are sometimes found clinging to *Musca* and other flies of medical interest. Several species were recorded from the Sudan by Tullgren (1909) and Beier (1946) ; and many occur in papyrus heads (University College, 1954).

ARACHNIDA : SOLIFUGAE

The Solifugae are confined to tropical and subtropical arid regions (Savory, 1935 ; Werner, 1911). Pocock (1897) considered that most of the genera found in the Ethiopian Region, including *Galeodes*, were of Palaearctic origin and had spread from Egypt and Nubia into dry areas to the south. *Galeodes arabs* C. L. Koch, known in the Sudan as *karaba* and in Egypt as *abu shabat*, is mainly a North African species and is the largest and commonest of the Solifugae in the Sudan, where it is known from Hawa, Khartoum, Nabardi Mines, Omdurman, Lake Rudolf, Shendi, Umm Badr and Wadi Halfa. It is often seen in houses and is much feared owing to its large size, powerful jaws, hairy body and rapid movements. It has no poison glands (Savory, 1935) and when unmolested is quite harmless. Presumably it might bite if handled

roughly or crushed. Very young specimens are sometimes seen indoors at Wad Medani after the rains and one of these nipped the human skin feebly without piercing it. A male of *Biton wicki* (Birula) was once found in a house at Wad Medani, and fifteen other species of Solifugae have been recorded from the Sudan by Birula, Hirst, Kraepelin, Lawrence, Roewer, Tullgren and Whittick.

ARACHNIDA : PENTASTOMIDA

Armillifer armillatus (Wyman) was reported from Khartoum by Riding (1926) and has been found in a human lung at Juba. A *Linguatula serrata* Frölich was found in the liver of a bull at El Obeid, according to a veterinary report, and a *Pentastomid* has been found in human faeces at Khartoum (Sandon, 1951).

SUMMARY

References are given to the extensive literature on Hemiptera, Coleoptera and Diptera of medical interest in the Sudan.

Some species of Hymenoptera, Siphonaptera, Acarina and many other groups of insects and arachnids are recorded.

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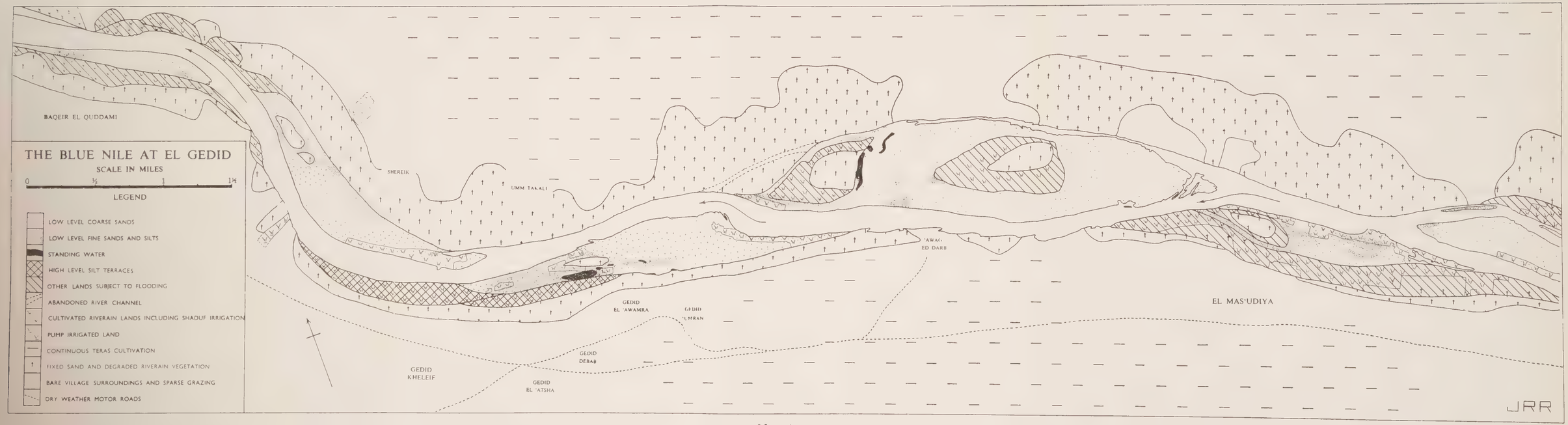
THE BLUE NILE AT EL GEDID
SCALE IN MILES
0
½
1
1½
LEGEND
LOW LEVEL COARSE SANDS
LOW LEVEL FINE SANDS AND SILTS
STANDING WATER
HIGH LEVEL SILT TERRACES
OTHER LANDS SUBJECT TO FLOODING
ABANDONED RIVER CHANNEL
CULTIVATED RIVERAIN LANDS INCLUDING SHADUF IRRIGATION
PUMP IRRIGATED LAND
CONTINUOUS TERAS CULTIVATION
FIXED SAND AND DEGRADED RIVERAIN VEGETATION
BARE VILLAGE SURROUNDINGS AND SPARSE GRAZING
DRY WEATHER MOTOR ROADS
BAQEIR EL QUDDAMI
SHEREIK
UMM TAKALI
'AWAG-
ED DARB
GEDID
EL 'AWAMRA
GEDID
'LMRAN
EL MAS'UDIYA
GEDID
DEBAB
GEDID
KHELEIF
GEDID
EL 'ATSHA
JRR

Map 4.

EL GEDID—A BLUE NILE GEZIRA VILLAGE

by

JOHN R. RANDELL

Introduction

The article attempts an account of the human geography of a small section of the Sudan Gezira ; namely the area occupied by a group of settlements on the Blue Nile including Gedid Kheleif, Gedid 'Umran, Gedid el 'Atsha, Gedid Debab and Gedid el 'Amwamra, collectively known as El Gedid, El Gedaid (in the plural) or simply Gedid. The area dealt with is admittedly small in comparison with the vast expanse of the Gezira and the contribution to the geography of the Sudan correspondingly modest ; but to use a phrase which Professor East applies in another connection the writer is of the opinion that ". . . in view of the infancy of the subject, it is necessary to substitute for the pursuit of wide generalization the careful study of particular illustrative cases."

Location and Physical Setting

El Gedid is a group of five communities situated on the west bank of the Blue Nile twenty-five miles south-east of Khartoum and about five miles north of the irrigated area. From the human and economic aspect this situation is one of the most interesting in the Gezira since it has allowed the survival of many traditional agricultural and other economic activities and thus enables us to see how these have been and continue to be influenced by recent events, such as the implementation of the Gezira Scheme and the improvement of transportation facilities.

The five sections of Gedid are strung along the stream at varying distances from the water's edge on an undercut bank of a river bend. The most striking feature of the site and one which probably influenced the original location of settlement is a pair of overlapping silt terraces of deposition, the upstream one being the higher of the two.[1] These are almost level to the naked eye and at low water they terminate abruptly in steep cliffs that drop to the river edge. This being the present undercut bank it appears that the formation of the terraces must be related to a period when the river followed a slightly different course. The higher one has almost been abandoned by the river owing to incision of the stream in its bed and is inundated only in years of exceptionally high flood such as 1946. The other, which is flooded in a normal year but may, on occasion, remain dry as in 1957, seems also in the process of being abandoned. In subsequent discussion these will be referred to as the high terrace and the low terrace respectively.

Downstream from the silt terraces the river is actively undercutting material of quite a different sort and distributing it in large, rectangular blocks along the base of the cliff which, at some points on this stretch of the river bank, is almost vertical. There is no recently deposited silt here. On the contrary, the configuration of the river bend and the degree of consolidation of the sediments suggest that the bank here is composed of the sub-soil of the Gezira clay plain.

The Blue Nile is in flood for only a short time each year and the rise and fall of the river, together with the high water period, occupy less than five months, from July to November inclusive.[2] For the rest of the year large parts of the river bed lie exposed above the level of the water and although these lands are less valuable than the silt terraces from an agricultural point of view, considerable areas are nevertheless planted

[1] See map of the Blue Nile at El Gedid.

[2] H. E. Hurst, *The Nile*, London, 1952, pp. 237–44.

every season. The low-level alluvial deposits show wide variations in texture but the coarser constituents predominate and in some instances the composition may include 90 per cent sands.[1] Finer materials seem to accumulate in those parts of the river bed where shoals produce backwaters and eddies at higher water. When the river shrinks to a narrower channel large areas of stagnant water are sometimes left behind, cut off from the main stream by intervening sand bars. As they dry up and the fine particles held in suspension are deposited, these too give rise to areas of heavier textured alluvium. Since the disposition of shoals and bars alters over the years so too does the location of such pools of water and an irregular pattern of alluvial deposits is the result.

In recent times there has been extensive deposition of coarse sediments at low levels along a two mile stretch of the river bed between Gedid Kheleif and 'Awag ed Darb, and the main channel, which formerly kept to the left bank, has now moved to the opposite side and is continuing to migrate in that direction. As a consequence, a *saqiya* which, during the *Mahdia*, was used to irrigate part of the high terrace all year round, has now been removed since water cannot be reached during the dry season.

The accumulation of sediments leads, eventually, to the formation of islands which are flooded, if at all, only during the high water period. Such islands are normally surrounded by large areas of *gerf* when the river subsides and being composed of silt the land is extremely valuable for cropping. Some of the arable riverain lands of Gedid 'Umran fall into this category.

Between the river and the clays of the Gezira is a narrow strip of wind-deposited sands varying in thickness from a few inches to six or eight feet and, for the most part, held in place by riparian vegetation. Usually the area remains uncultivated but where the land is not too high and water can be made available fruit, especially citrus, will grow well.

The clays of this part of the Gezira have never been thoroughly investigated. Studies undertaken in connection with the Gezira Scheme are confined to more southerly parts whereas Worrall's paper directs attention to the Khartoum district to the north. Certain conclusions, however, may be drawn from the work already done. Using the degree of concentration of soluble salts in the first four feet as an indication of fertility we may note that these soils are less valuable than those of the Manaqil Extension, for example, which until now have been widely used for *teras* cultivation. However, owing to the coarser texture of the upper horizon, soils in the vicinity of Gedid are able to absorb moisture more readily than those farther south where the percentage of clay at the surface is much higher.[2] This factor undoubtedly compensates, to some extent, for drier conditions and helps to explain the continuing production of rainland *dura* in an area where mean annual rainfall is less than 200 mm.

In terms of climate the location does not appear a very favourable one but climatic records for the locality whether they are used in an attempt to interpret the early history of settlement or to account for present activities are apt to be misleading. In the first place, there is evidence to support the view that in former times, when the vegetation was more abundant, the climate was correspondingly less severe and that

[1] G. A. Worrall, "Features of Some Semi-Arid Soils in the District of Khartoum, Sudan", *The Journal of Soil Science*, Volume 8, Number 2, September, 1957, p. 208.

[2] Crowther describes the soil at the Gezira Research Farm, Wad Medani, as consisting of 59 per cent clay in the first 12 in. and up to 62 per cent clay to a depth of 4 feet. The soils of the northern Gezira described by Worrall consist of dry, structureless coarse sand at the surface and dry, loamy, coarse sand to a depth of 12 in. below this. The clay horizon lies below and even this may be sandy clay. F. Crowther, "A Review of Experimental Work" in J. D. Tothill (Editor), *Agriculture in the Sudan*, London, 1954, p. 442 and Worrall, *op. cit.*, pp. 196–97.

within historical time the destruction of vegetation over large areas south of the Sahara has brought about a decline, both quantitatively and in terms of reliability, of the rainfall.[1] This is a most controversial topic and competent authorities are in agreement only in that former conditions were moister ; the points at issue being the definition of "historical time" and the reasons for climatic change. The second objection to attaching a great deal of importance to climatic records is that in an area where agriculture is dependent upon annual river flooding, irrigation by *shaduf* or the canals of the Gezira Scheme, rainfall statistics are of only limited significance. Finally, we should observe that the livestock economy of Gedid embraces a large area of the Gezira, that climate in the vicinity of the village cannot be regarded as typical of the area as a whole and that in view of the supreme importance of animals in former times climatic conditions at Gedid had less significance then than now.

With these reservations in mind we may note that the 200 mm. isohyet crosses the Gezira in an east-west direction about five miles south of the village.[2] There are no statistics at all for the village itself. For this reason and in view of the trend of isohyets the records of Jebel Aulia, which span a period of thirty years, will be employed instead. The annual average for this period is 202 mm., 170 mm. of which falls in heavy showers between July and September inclusive.[3] Annual averages, however, do not imply any probability that the amount received in a given year will approximate to that figure and this is especially true of semi-arid regions ; the lower the annual average the less reliable is it likely to be. In many respects, therefore, it is more useful to employ other concepts such as the probable error and the upper and lower quartiles.[4] For Jebel Aulia these are 50 mm., 235 mm. and 149 mm. respectively.[5] The last is the most valuable figure since it indicates the minimum to be expected in three years out of every four.

It will be seen below that the growing season of 70–90 days for rainland *dura* corresponds approximately to the three wettest months, July, August and September. Bacon gives a figure of 10 in. (250 mm.) for *dura* grown by *teras* and notes that the amount should fall within a period of two months.[6] Gedid thus lies very close to the arid margin of cultivated rainland in the Sudan.

For want of a closer station the records of Jebel Aulia are used to indicate temperature conditions as well ; it being noted that whereas the rainfall figures are slightly too high it is likely that temperatures at Jebel Aulia are slightly lower than at Gedid. Daily means range from 23·2°C. in January to 33·4°C. in May with mean minima of 15·5°C. in January and 26·2°C. in June and mean maxima of 31·0°C. for January and 41·1°C. for May. Of equal significance from the standpoint of human comfort is a diurnal range of 17·9°C. in March and 10·2°C. in August ; the August range being 2°C. less than in Khartoum.[7]

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[1] E. P. Stebbing, *The Creeping Desert in the Sudan and Elsewhere in Africa*, Khartoum, 1953.

[2] Map of Average Annual Rainfall 1921–1950 in the Sudan, Topo. No. S. 912-54, published by the Sudan Survey Department, Khartoum, Sudan.

[3] Sudan Meteorological Service, Pamphlet No. 2, *Annual Rainfall Parameters* 1921–50, Khartoum, 1954, p. 2.

[4] There is a 50 per cent chance that the annual rainfall in any particular year will be within the limits : average plus or minus the probable error. The upper quartile is that value of the annual rainfall which has been exceeded on one quarter of the recorded occasions and the lower quartile is that value which was exceeded on three-quarters of the recorded occasions.

[5] Sudan Meteorological Service, *loc. cit.*

[6] G. H. Bacon, "Crops of the Sudan", in Tothill (Ed.), *op. cit.*, p. 310.

[7] A. W. Ireland, "The Climate of the Sudan", in Tothill (Ed., *op. cit.*, pp. 74–79.

During the three hottest months, April, May and June, when mean daily maximum temperatures are 40°C. or above and mean daily evaporation (Piche) is also at a maximum (22·0 mm., 20·8 mm. and 19·3 mm. respectively), there is no cropping on either of the silt terraces. On the low terrace, which is not irrigated, the agricultural year is confined to the six month period from September to February inclusive, the last four months of which are the coolest of the year.

The vegetation is acacia desert scrub but within a mile or more of villages away from the rivers the landscape is often completely bare. Common grasses include the camel grass *emferid* (*Schoenefeldia gracilis* Kunth.), *heskanit* (*Cenchrus catharticus* Del.), important as an animal fodder and *nal* (*Cymbopogon nervatus* Chiov.). Among the trees and scrub *acacia* species predominate. The type species is the large shrub or small tree *samr* (*acacia tortilis* Hayne).[1]

Trees and bushes acquire a somewhat ragged appearance due, in part, to the work of grazing animals. Goats stand beneath, upright on their back legs, supporting themselves against the trunk with their forefeet and biting off the leaves and twigs above. If the tree has a sufficient number of stems branching from the butt close to ground-level the goats will climb into the tree itself, the better to carry on their depredations. Camels, on the other hand, attack from above and cattle browse on the edges of the canopy. Only the most vigorous and sturdy of trees can withstand such combined operations and those that do are likely to fall to the axe of the fuel gatherer so that the common aspect is not of the trees themselves which are comparatively few but of the more numerous bare, broken stumps and low mounds of earth where trees and bushes formerly stood guard over the soil and prevented erosion.

Along the river banks common species include the two thorny shrubs *siddir* (*Zizyphus Spina-Christi* Lam.) and *tundub* (*Capparis decidua* Pax.) both of which produce an edible fruit ; the imposing *haraz* (*Acacia albida* Del.), largest of Sudanese acacias and *seyal* (*Acacia spirocarpa* Hochst.)[2] the pods of which, *kharuma* and *ullaf* respectively, are highly valued as animal feedingstuffs. Welcome colour is added to the landscape by the yellow flowers of *sunt* (*Acacia arabica* Willd.) and the bright, reddish-brown bark of *talh* (*Acacia seyal* Del.). The latter tree is useful in a variety of ways including the provision of gum, a coarse fibre from the bast and a tanning agent from the bark.

It will be seen from the map that the area of riverain vegetation is wider on the eastern bank where the settlements are more distant from the stream. On the other hand, except in the vicinity of Shereik, the vegetation is also less dense. For the most part, land on this side of the river is common grazing and no one undertakes the protection of vegetation. On the opposite side of the stream field boundaries on the silt terraces and other riverain lands are extended into the belt of riparian vegetation and stands of valuable species are surrounded by thorn fences (*zaraib*, A. pl.) to keep the animals out. Thus the stands of trees and bushes here, although narrower, are much thicker. This is especially noticeable next to the high terrace.

[1] For a fuller account than can be given here see A. F. Broun and R. E. Massey, *Flora of the Sudan*, 1929 ; R. E. Massey, *Sudan Grasses*, Khartoum, 1926 ; F. W. Andrews, *The Flowering Plants of the Sudan*, 3 vols., Arbroath, 1950–56 ; J. Smith, *Distribution of Tree Species in the Sudan in Relation to Rainfall and Soil Texture*, Khartoum, 1949. The final work is extremely valuable from a geographical point of view.

[2] Some confusion exists over the botanical equivalent of the Arabic term *seyal*. Andrews gives *Acacia raddiana* Savi., Broun and Massey *Acacia spirocarpa* Hochst., and in Tothill both these as well as *Acacia tortilis* Forsk. are given. No doubt *seyal* is used in different parts of the country to refer to different species. At Gedid it appears to denote *Acacia spirocarpa* Hochst. since here it is a large tree.

Historical Background

This part of the Gezira has been inhabited from the earliest times. It was on the Blue Nile at Khartoum that man made the first advances toward civilization in the Sudan that have been uncovered to date. Stone artifacts and sherds reveal a culture based on hunting and fishing which dates from 5,000 B.C. or perhaps earlier.[1]

The first reference to settlement in the vicinity of Gedid is an itinerary of Bion, recorded by Pliny, dating from the 1st century A.D.[2] but Meroitic inscriptions on the ram which Gordon brought to Khartoum from Soba show that the town on the opposite bank had attained some importance as early as 300 B.C.[3] Soba is the only site to have been excavated but habitation in the area generally appears to be of great antiquity.[4] Crawford believes that Gedid, Soba and 'Eilafun are all ancient settlements.

Ibn Selim, writing in 985 A.D., gives us a brief account of agriculture in his description of the capital of Alwa. At that time the chief grain of the country was white millet or *dura* but, unfortunately, we are not told whether it was a riverain or a rainland crop. Livestock were numerous including many cattle, well-bred horses and Arab camels.[5] A later description, written by Abu Salih, the Armenian, at the beginning of the 13th century, depicts two aspects of present-day agriculture when it refers to crops dependent upon the rise of the Nile and upon the rain.[6] The Fung Chronicle states that before the investiture of 'Omara Dunkas in 1505 the chief food of the inhabitants of Soba was the white *dura* known as *el kassabi*.[7] This is undoubtedly the variety which Bacon refers to as *Gassabi* (*Sorghum vulgare* Pers. var. *caudatum*. Stapf.)[8]

The present inhabitants of Gedid belong to several tribes including the Dwayhia, 'Awamra, Hudur, Ansar and Kawahla. Both the Dwayhia and the 'Awamra belong to that large group of Arabic-speaking tribes in the Sudan known as the Guhayna.[9] According to local tradition, their occupation of the site pre-dates the Fung Kingdom and documentary evidence, while not conclusive, tends to confirm this.

The main hindrance to Arab penetration up the Nile valley was the Christian Kingdom of Dongola which had fallen into decline by the beginning of the 14th century. Alwa, in the south, survived till somewhat later but before the end of the century large numbers of Arabs, mostly Guhayna, had entered the Sudan via Egypt and over-run the country as far as Abyssinia, Darfur and beyond.[10] It is probably to these years, or during the 15th century, that we can date the Arab occupation of the site of Gedid since by the Fung period there were some fifty-two tribes belonging to

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[1] A. J. Arkell, *A History of the Sudan to A.D.* 1821, London, 1955, pp. 24–5 ; A. J. Arkell, *The Old Stone Age in the Anglo-Egyptian Sudan*, Sudan Antiquities Service, Occasional Papers, No. 1, p. 51 ; A. J. Arkell, *Early Khartoum*, Oxford, 1949.

[2] O. G. S. Crawford, *The Fung Kingdom of Sennar*, Gloucester, 1951, pp. 3, 15–16.

[3] Arkell, *History of the Sudan*, p. 156.

[4] Crawford, *op. cit.*, p. 73 and H. G. Balfour-Paul, "Early Cultures on the Northern Blue Nile", *S.N.R.*, XXXIII, 1952, pp. 202–15.

[5] P. L. Shinnie, *Excavations at Soba*, Sudan Antiquities Service, Occasional Papers, No. 3, p. 12.

[6] *Ibid.*, *loc. cit.*

[7] *Ibid.*, p. 14.

[8] G. H. Bacon, "Crops of the Sudan", in Tothill (Ed.), *op. cit.*, p. 306.

[9] H. A. Macmichael, *A History of the Arabs in the Sudan*, Cambridge, 1922, vol. I, pp. 238–39.

[10] Arkell, *History of the Sudan*, pp. 198–9, 208.

the Guhayna on the Blue Nile near Soba.[1] From the description of their economy it appears that most of them were still leading a semi-nomadic existence, growing a rain crop in the *wadis* and pasturing their flocks inland[2] but there is nothing in this way of life to preclude a permanent settlement inhabited by some people throughout the year. The large populations of the Manaqil area have occupied villages on this basis for many generations.

Gedid is first mentioned by name around the end of the 17th century ;[3] again in 1772 when Bruce crossed the river at 'Eilafun[4] and in 1805.[5] This brings us to comparatively recent times and the span of living tradition.

Traditional Economy

Traditionally the economy of Gedid rested on four main supports. In order of importance these were : (1) rainland farming—the growing of *dura* by *teras* cultivation ; (2) riverain agriculture—utilizing riparian lands at various levels and riverside pastures ; (3) trading in crops grown by the riverbank and a wide range of commodities brought from outside the Gezira and (4) animal husbandry.

In former times the foundation of existence was rainland farming. This normally meant the production of *gassabi* or *feterita dura* by *teras* agriculture but where conditions were especially favourable, as in depressions or *maya* in the clay, where winter run-off naturally accumulates, cotton was produced as well. This would be spun and woven locally into *dammur* cloth which then provided an article of trade.[6]

The theory upon which *teras* agriculture depends is that the soil can be made to absorb more rainwater if normal run-off is prevented but that, owing to impermeability of the clay which increases up to a depth of 3 feet, the water absorbed does not penetrate beyond the reach of plant roots.[7] Some control over loss by capillary motion to the surface and evaporation is achieved by frequent cultivation of the topsoil.

Normal run-off can be prevented by raising low earthen ridges (Arabic singular—*teras*, plural—*turus*) about 12–18 in. high along the contour and extending them upslope. In practice, we find that the pattern of *turus* is not determined by relief alone and that even if the original pattern was so determined it has subsequently been greatly modified by land fractionation.[8] Nevertheless, the method continues to be effective as a means of increasing the efficiency of rainfall and was probably more so in earlier times when fields were larger and the run-off from a wide area could always be used to water only the lower part of it.

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[1] Macmichael, *loc. cit.*

[2] *Ibid.*, p. 342.

[3] Macmichael, *op. cit.*, vol. II, p. 254—No. 166, p. 228—No. 47.

[4] Crawford, *op. cit.*, p. 252.

[5] Macmichael, *op. cit.*, p. 379. In 1800 it appears on Williamson's Map of Africa. See H. Johnston, *The Nile Quest*, 1903, p. 91.

[6] For an account of Sudanese techniques the reader is referred to an article by Grace Crowfoot, "Spinning and Weaving in the Sudan" in *Sudan Notes and Records*, IV, 1921, pp. 20–38.

[7] In rainland soils investigated by Greene (Tothill, *op. cit.*, pp. 444–7) the penetration of water is held up by a zone of salt accumulation about 3 feet below the surface and it has been shown that in irrigated soils of the Gezira little or no water applied at the surface reaches the water table which lies at a depth of 50 feet or more. In the soils of the Khartoum District the same relationship has been observed between salt content and permeability, but below 3 feet there is a much sharper decrease in the moisture of the soil. Where rainfall is deficient this "perched water table" permits unirrigated cropping which cannot be practised at the same latitude on the sandy soils west of the White Nile.

[8] This has resulted in smaller, scattered holdings but more particularly in a reduction of the amount of water available per unit of cropped land.

The other factor which made this type of grain production more significant formerly than now is labour. Slaves were widely employed on the rainlands by wealthy landowners and the total area under cultivation was probably much larger than it is today.

Apart from the scale of operations agricultural practice is much the same. When the land has received a thorough soaking during the first heavy storms of July the grain is sown by *seluka*.[1] Frequent weeding is necessary until the plants have established themselves and, after a period of 70–90 days, the grain is harvested, usually some time in October. Yields in earlier times cannot even be estimated but it is claimed that they were heavier than at present and that declining productivity can be ascribed to decreasing precipitation.[2] Whatever the reason, there had been a marked shift in emphasis from the rainlands to other occupations, particularly trade, long before the establishment of the Gezira Scheme.

Riverain agriculture, on the other hand, seems to have provided much more dependable harvests as well as a wider range of produce. We may distinguish four main types of cultivable land, each with its own cropping season and distinctive combination of crops.[3]

The high terrace is not normally flooded but at regular intervals along its edge *shadufs* have been constructed to irrigate the land.[4] When the river is low as many as three *shadufs*, one above the other, are required to lift the water the full height of the bank. At extreme low water the river has retreated to a narrower channel and cannot be reached at all, but soon after the water has begun to rise the low-level sands and shoals are flooded and the river's edge reaches the *shaduf* at the bottom of the bank. One by one the *shadufs* are removed as the water rises and one by one they are replaced as the river drops again; the period of irrigation lasting from July to December inclusive.[5] A variety of crops were produced in former times including vegetables, pulses and grain. In periods when *dura* was in short supply the emphasis was placed on staple foods. In times of plenty the land was utilized in such a way as to diversify the diet.

The low terrace consists of two parts. The downstream end is slightly higher than the rest and is not always flooded by the rising river. The normal practice has been to install *shadufs* in July on the assumption that the land will not be flooded and then, if the water inundates the area during a high flood, the *shadufs* are abandoned and a new set of crops sown in September when the river starts to drop again. The upstream end is normally flooded but the extent of flooding varies from year to year and sometimes the river does not rise sufficiently to moisten the soil at all in which case this part of the terrace remains uncultivated. Cropping on the low terrace is not a simple affair, being a reflection of subtle differences in relief, consequent variations in soil texture and the changing regime of the river. Apart from the *shaduf* gardens, where conditions in a normal year are comparable with those on the high terrace, there are three belts of

[1] A pointed, flat-bladed sowing stick with a foot rest and a slightly curved handle.

[2] If rainfall has decreased the effect has been aggravated by the factors mentioned above. Soil exhaustion is operative as well. See J. H. K. Jefferson, "The Sudan's Grain Supply", *S.N.R.*, XXX, 1949.

[3] A fifth type is located in the belt of sands and riverain vegetation and is discussed under *Recent Developments*.

[4] The *shadufs* operate in pairs and two gardens share the water so there are six at each point on the bank when the river is low.

[5] Towards the end of December irrigation can be prolonged by extending channels across the sand from the lowest *shaduf* in the direction of the shrinking river and filling them with water carried from the stream.

crops aligned parallel to the river. Individual holdings consist of narrow strips of land running across the terrace so that each cultivator grows crops in each of the three belts. The middle belt is the first to emerge, as a low island, when the river subsides. Soils here are easier to work and the main crops were usually groundnuts and vegetables including tomatoes and the vegetable marrow, *garaa kossa* (*Cucumis Pepo* DC.). On either side the land is lower and, especially on the inland side, the soils are heavier and much more difficult to cultivate. The main crop, on both sides, has generally been *lubia 'afin* (*Dolichos Lablab* Linn.) and along river edge of the terrace bamia (*Hibiscus esculentis* Linn.) and *dukhn* (*Pennisetum typhoideum* Burm. Stapf and Hubbard).[1] Before the rise of the river the ground was prepared by hand using the long-handled hoe, *malod*, and the crops sown in the moist soil by *seluka* in September. Cropping continued until February when the last of the *lubia* was taken and livestock then had free access to the stubble so that their droppings would enrich the soil when the rains came in June and July.

The extensive areas which are exposed at lower levels consist of much lighter textured alluvium and it is only favoured localities that will produce good crops. Two opposing factors appear to influence the location of arable land. The higher, sloping *gerf* consists of silt, the lower sections lighter materials, mainly sands (with the exception of scattered areas of sandy silts resulting from the drying up of pools and channels cut off as the river drops—see above). On the other hand, the water table lies closer to the surface at lower levels and especially along the edges of the stream itself. Such areas are often cropped in spite of their sandy nature. By the middle of January watermelons, *bamia*, *agur* (*Cucumis Melo* Linn.) and various green vegetables could be planted in the river bed and crops taken off before the hottest weather in May.

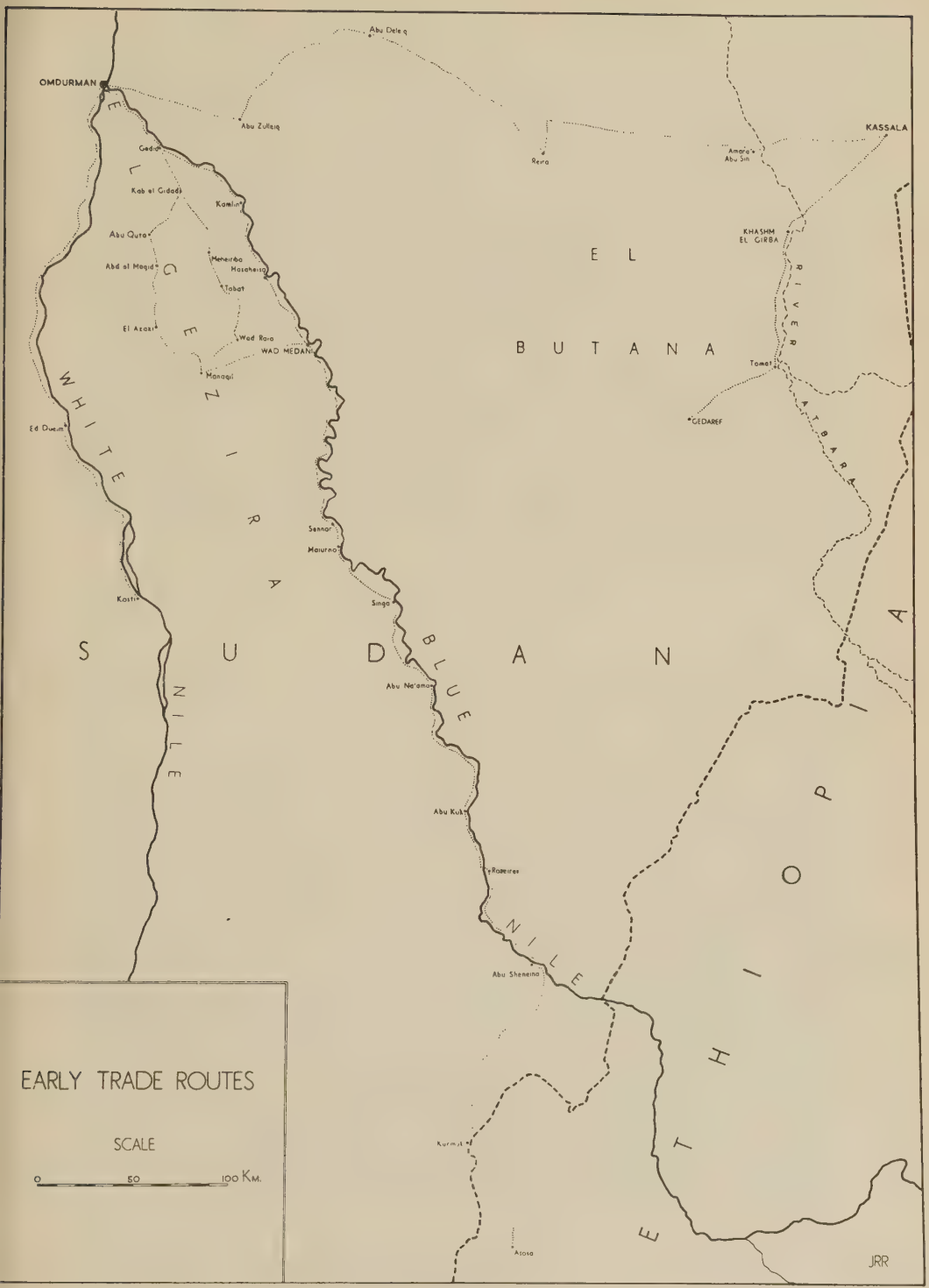
The final category of cultivable riverain land consists of the sloping margins of islands. In many respects these areas are similar to the *gerf* mentioned in the previous paragraph. The main difference is that they have a greater extent due to gentler slopes. A wider range of crops can thus be produced including *dura*, *dukhn* and wheat among the grains, vegetables such as beans, sweet potatoes, marrows, *bamia*, *khadra* (*Phaseolus vulgaris* Linn.) and *mughad* (*Cephalandra quinqueloba* Schrad.) as well as *lubia* and watermelons. The cropping season commences in early October and lasts for about three months.

One cannot compare rainland and riverain agriculture in terms of their relative importance to the traditional economy. It is true that the former is largely a game of chance and that the latter provides a more dependable return for work and capital invested. However, *dura* has always been the staff of life and the continued cultivation of rainlands is a clear indication that even such an unreliable source of supply ultimately repays the effort expended to maintain it.

It was the riverain crops from which a regular surplus could be accumulated that led to the use of commodities such as dried *bamia* and *khadra* as articles of trade. With this domestic source of supply as a basis for their enterprise merchants from the village expanded the scope of their operations and bought various goods from the markets of Omdurman. Ultimately, the more enterprising merchants found larger profits in trade with remoter parts and they began to frequent the established caravan routes and may even have opened up new ones themselves.

At first the operations centred mainly on the Gezira where three principal routes were in common use. These are shown on the map and may be referred to as the

[1] *Lubia* sown on the inland side also serves to protect the more valuable crops by diverting foraging livestock.


OMDURMAN
Abu Delea
Abu Zulteiq
Gedaref
Kab el Gidad
Kamlin
Abu Quta
Abd al Maqid
Meheriba
Hasaheisa
Tabat
El Azazi
Wad Rara
WAD MEDANI
Managil
Ed Duem
Kosti
Sennar
Maiurno
Singa
Abu Na'ama
Abu Kuka
Rosaires
Abu Sheneina
Kurmuk
Asosa
Reira
Amara Abu Sin
KASSALA
KHASHM EL GIRBA
Tomat
GEDAREF
EL GEZIRA
BUTANA
ATBARA RIVER
WHITE NILE
BLUE NILE
SUDAN
ETHIOPIA
EARLY TRADE ROUTES
SCALE
0 50 100 KM.
JRR

MAP 5.

central, eastern and Blue Nile Gezira routes with southern termini at El 'Azazi, Manaqil and Wad Medani respectively. In addition to produce of the village, merchandise included various grades of cotton cloth, beads, articles for the feminine toilet and imported spices, all of which were transported by camel train. The merchants, who rode in groups of three or four for reasons of security, usually travelled by donkey. Stops were made for the night in market villages and after some brisk trade in the early morning the group moved on to the next market.[1]

From Medani the Blue Nile route led southward to Sennar and the large Fellata communities in the vicinity of Maiurno which was about as far as local traders went. Beyond this the destination was usually the important trading station of Asosa across the Ethiopian border south of Kurmuk where high grade coffee and gold could be obtained.[2] Traders into Ethiopia would dispose of most of the coffee on the return trip to Medani but the gold was taken to Omdurman. Although it was usual to carry as much as 100 ounces per person loss of life through brigandage does not appear to have been common.

Kosti was reached via the west bank of the White Nile and Ed Dueim. A similar range of goods could be taken from Omdurman but it was more usual to travel light, taking some cotton cloth on donkeys and the bulk of purchasing power in cash. Cattle were bought from the Baqqara, Hasania and Habbania, herdsmen hired for the return trip and the animals disposed of in Omdurman.[3]

An eastern route across the Butana involved the most difficult passage. Through Abu Deleiq and Reira to Kassala, then southwards across the Atbara via Khashm el Girba to Gedaref, the return trip took as much as a month. Cloth was sold to buy sesame oil, honey, coffee and dates (compressed and packed into goat skins). The coffee obtained from this source was inferior to that from Asosa. The origin of the dates is obscure. During the famine years of the Mahdia a traffic in grain from Gedaref was set up along this route.

Animal husbandry, while less important than the occupations mentioned above, nevertheless occupied a vital place in the village economy. Sheep, cattle, goats, donkeys and camels were raised in this order of importance. It was usual for them to be herded separately as their fodder requirements differ and normally the person in charge was hired by the owner of the livestock. Some families, however, depended mainly on their livestock and led a nomadic existence during the dry season, moving from place to place in search of pastures and living in temporary huts of straw. In autumn such people were blessed with an abundance of milk and they could always find a ready market in the village for butter and cheese.

From the above account it will be seen that the village economy had undergone marked changes since the period of semi-nomadism in early or pre-Fung times as described by Macmichael.[4] The decline of livestock to a position of least importance is a significant consequence of the transition to a sedentary way of life. One should not be tempted to try and date this period of transition. In all probability it can be related

[1] It will be noted that the spacing of market villages in the Gezira would allow travel by such easy stages. Was the original spacing perhaps influenced by this factor ?

[2] The area has long been known for its gold. See R. L. Hill (trans.), "A Manuscript Concerning Events in the Sudan, 1843–1848", *S.N.R.*, XXXVI, Part 2, 1955.

[3] There was some traffic westwards to the Nuba Mountains but the route taken is less well known.

[4] H. A. Macmichael, *A History of the Arabs in the Sudan*, p. 342.

PLATE 1. Rainland *dura* at Gedid 'Umran. 28th September, 1958.

PLATE 2. *Shadufs* on the high terrace. The Blue Nile in flood in the background. 28th September, 1958.

PLATE 3. Young tomato plants under *shaduf* irrigation on the high terrace, 28th September, 1958.

PLATE 4. The edge of the low terrace in May, 1957. This is the downstream end and the remains of a *shaduf* ditch can be seen in the foreground.

PLATE 5. Water is accumulating here by seepage through the low level sands and silts. Enough is obtained to irrigate one small garden near Gedid 'Umran. May, 1957.

PLATE 6. A merchant's house in Gedid 'Umran. April, 1958.

PLATE 7. Gedid's water supply arriving from the river.

PLATE 8. A family from 'Eilafun fishing in a pool in the river bed opposite Gedid Debab. April, 1958.

to the more settled conditions of Fung rule but it is impossible to be more precise than this.[1]

Recent Developments

The irrigation of the Gezira brought fundamental changes to the village economy even though Gedid received no tenancies during the first ten years of the scheme's operation. Similarly, the growth of urban markets in the three towns, the increasing use of "suk" lorries and the extension of the railway to points formerly reached only by donkey and camel train have all contributed to the developments which have recently taken place. It is difficult to make an absolute distinction between one cause of change and another. The impact of western civilization on the traditional way of life has had profound effects and it would be vain to attempt a complete explanation of them here.

Soon after the Gezira Scheme was opened in 1925 individuals and families from Gedid went to work as hired labour in the irrigated area. The influx of labour from the west and the distribution of tenancies to Gedid landowners in 1942 reduced the importance of this type of employment as even those without tenancies themselves found that they could now earn more by working for tenants in the village than by competing with migrant labour in the *howashas*. Such work included the building of courtyard walls, new roofs and cultivating the tenants' *shaduf* lands.

Altogether Gedid possesses 212½ tenancies in the Gezira Scheme ; a larger number than that occupied by the villagers of Kab el Gidad despite the location of the latter settlement within the irrigated area and that of Gedid outside it. All the tenancies are located in the Kab el Gidad Subdivision and mainly in the Faragin and Es Sudeira Blocks[2] since much of this land was rainland belonging to the village before implementation of the scheme. Although this is the closest section of the irrigated Gezira none of it is less than five miles away and, depending upon the exact location of the *howasha* (and the speed of his donkey), a tenant may spend as much as 2½–4 hours in reaching his land from the village. It may be due in part to this factor or perhaps to his other interests in the village by the river that the tenant of Gedid is not regarded among the best by Gezira Board officials.

The agricultural practices of the Gezira Scheme are well known and no space can be devoted to them here. This should not be taken as an indication of the lack of importance of tenancies to Gedid. The tenants now constitute a numerous and prosperous middle class in village society although the well established and successful merchants tend to regard them as the *nouveaux riches*.

There has been no abandonment of riverain lands since the irrigation of the Gezira. Most tenants cultivate their strips of land on the low terrace in addition to supervising the work on their *howashas* although tenants who previously irrigated land by *shaduf* have been forced to relinquish it or rent it to someone else.[3]

It has been noted above that crops produced on riverain lands provided an initial impetus to trading activities. In recent times they have become cash crops in the modern sense. The proximity of Gedid to the large urban market of Khartoum is a major factor in this regard although some commodities move in the opposite direction

[1] For a summary of such conditions see O. G. S. Crawford, *The Fung Kingdom of Sennar*, Chapter IV, and also Sadik el Nur, "Land Tenure in the Time of the Fung", *Kush*, IV, 1956.

[2] See Northern Gezira sheet of the Sudan Survey Department 1 : 250,000 series (Topo No. S 856-51), Khartoum, 1951.

[3] *Shaduf* lands are normally rented for 50 PT. per *habil* (about 3.42 metres) along the river bank.

toward the market centres of the Gezira. Two of the most important cash crops are tomatoes and groundnuts. The former is grown under *shaduf* irrigation on the high terrace which is now devoted almost exclusively to this one crop. Tomatoes are grown in the *shaduf* gardens on the low terrace as well in combination with other cash crops such as watermelons. Among the riverain villages of the Blue Nile supplying tomatoes to the Khartoum market[1] Gedid is one of the most important and the crop is a valuable one for the village since an early picking in late November reaches the market before supplies from other producers are available in volume.[2] Those who are able ship the crop themselves but buyers often come from the city at the start of the picking season and purchase their requirements on the spot. Of the crops produced on the low terrace, aside from tomatoes, groundnuts and *lubia* provide the best returns although the total income from watermelons, vegetable marrows, *agur*, *bamia*, *'ads sudani* (*Cajanus cajan* (L.) Mill) and *dukhn* is probably greater. *Lubia* is grown primarily for the beans which are sold in Khartoum as animal fodder.[3] Both the other categories of riverain land, the low-level sands and mid-stream islands, contribute to the money income of the village through a wide range of cash crops including many of those mentioned in the preceding section. However, there is not the same degree of specialization on these lands that has been noted on the silt terraces.

A question which must remain unanswered is whether the terraces would be suitable for irrigation by mobile pumps operated on a co-operative basis so as to utilize the land over a longer cropping season. So far, the initial outlay which pump irrigation requires has proved beyond the resources of the average villager in Gedid. Records of the Rural District Council in El Mieiliq list only three pump gardens, two belonging to merchants and the third to the *Nazir*.[4] The last of these, occupying about thirty-four *feddans*, includes a citrus grove with grapefruit, orange and lime trees ; an area devoted to vegetables such as *bamia*, *khadra*, *agur* and chillies ; a small field of wheat and a patch of watermelons. Outside the garden some groundnuts are planted each July and watered if the rains are insufficient. This area is indicated by the broken line on the map.

The rainlands of Gedid are cultivated by the same methods that have been employed for generations, the intensity of land use increasing with proximity to the village. It is possible to find the entire area of individual fields sown with *dura* in the vicinity of the settlement whereas village lands in the centre of the northern Gezira are more often laid out in such a way that run-off is used to water only a small area.[5] By the latter means a man owning some 50–70 *feddans* will grow *dura* on the lower 15–20 *feddans*—more or less depending upon the early rains and the extent of flooding. Each year the *turus* have to be maintained, the land prepared and the seed sown whether a crop will be harvested or not since the coming rains cannot be predicted. These operations involve the owner in a calculated risk as the cost of labour will amount to about £S.20–25 and seed about 90PT. for an area of this size. If the rains are favour-

[1] Others include, from north to south, Gereif, Umm Dom, Butri, 'Eilafun, Baqeir, El Masudiya.

[2] The price received in November and December is nearly double that obtained in February and March.

[3] Some may be eaten locally when meat is scarce.

[4] The Nazir's garden is shown on the map between Gedid Kheleif and Baqeir el Quddami. One of the others is farther downstream and the third, too small to be mapped, is located in the belt of riverain vegetation near Gedid el 'Awamra and draws its water from a well.

[5] More work will have to be done on *teras* agriculture to provide a satisfactory explanation of field patterns. Completely different layouts can be seen on areas adjacent to one another. Soil conditions undoubtedly exercise a powerful influence as do rainfall, relief and cultural factors.

able, weeding or *hishing* the crop, harvesting and threshing will demand a further outlay of £S.15–20. In a good year the land will produce a crop of two *ardebs* per *feddan* and such returns can be expected about once every five years. At a price of £S.3.500 per *ardeb* a bumper crop would thus be worth over £S.100 but such returns are exceptional.[1] In former times good crops may have been more frequent. At present the continuation of rainland farming at this latitude where the probability of crop failure is so real a hazard can only be understood if one considers that the alternative, buying the grain on the open market, is likely to be more expensive. A complete failure, of course, entails financial loss but a frequent outcome is a crop which costs something less than the market price. Occasionally the land will yield a grudging profit.

The contacts and reputation established by the merchants of the village in earlier times were not lost after the implementation of the Gezira Scheme. Indeed, the augmented incomes of tenants and the greater purchasing power of the general population brought about an expansion of trading activities. Those like the traders of Gedid who had a ready fund of experience, were the first to benefit from this and, in some instances, were able to build shops in the marketing centres. Such people have since become wealthy merchants and are the most prosperous element of the village population. Some, having established themselves in places such as Kosti, Singa, Maiurno, Sennar, Wad Medani, Manaqil, El 'Azazi, Gedaref and Khashm el Girba, have left the village altogether as have others who were able to retire to the Nuba Mountains on the proceeds of their enterprises. The new situation required an ability to adjust rapidly and take quick advantage of changing circumstances. In many respects the traders of Gedid 'Umran which is a younger community than Kheleif proved the more adaptable. They bought *suk* lorries, began to carry passengers between the villages and the Three Towns and established wider contacts than the more cautious and conservative merchants of Kheleif. Their sons are more often educated outside the village and the consequent influx of new ideas has brought new sources of income as well.

The effect of the Gezira Scheme on the livestock of the village has been to reduce their numbers still further. No one now possesses camels in Gedid Kheleif and cattle which were once second only to sheep in importance are now to be found in much smaller numbers, perhaps one or two per family. Sheep and goats are the most numerous and economically significant and they provide the main means of support for seven or eight families in Kheleif alone. Such people still lead a nomadic existence during the dry season. The village donkeys are indispensable since they are used, among other things, for bringing the water supply from the river. A notable feature of the present animal population is that 'Umran, with much fewer inhabitants, has as many if not more animals than the older and more populous Kheleif.

Summary

From this brief account at least one valuable conclusion may be drawn. It will be seen that each of the traditional occupations has its counterpart in the contemporary economy of Gedid and for those who practise them such occupations are as important now as they have ever been. It may be noted, furthermore, that the economy of the present, like that of the past, is a diverse one related to local physical, historical and cultural influences as well as those of Western culture and technology. Such influences

[1] It should be noted that the holding itself is not necessarily typical. Probably most holdings are much smaller than this.

do not provide uniform conditions even within the irrigated part of the Gezira and studies there as well as on the White Nile and in the Manaqil area confirm the conclusion reached at Gedid that the " typical Gezira village " is as difficult to find as the "typical Gezira peasant".

In a study of this sort it is always difficult to decide where to draw the boundary between geography and the other physical and social sciences and to decide which of many approaches will contribute most to an understanding of the human element in the total topography. This is a constant dilemma for the student of geography and the cause of much abuse which is directed toward the subject by specialists who are, no doubt, better qualified to pronounce with finality upon particular aspects of geographical problems. If such aspects of this introductory survey receive further study by Sudanese experts one of the writer's primary aims will have been achieved.

DISTRIBUTION OF POPULATION AND TENANCIES—1950[1]

	Human Population	Animal Population					Tenancies
		camels	cattle	donkeys	sheep	goats	
Gedid Kheleif	1300		8	36	56	132	91½
Gedid Umran	700	2	16	49	49	127	75½
Gedid Debab, „ Awamra, „ El Atsha	600	1	2	34	19	120	45½
TOTAL	2600	3	26	119	124	379	212½

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A NOTE ON THE MAP

The map of the Blue Nile at El Gedid was compiled from two sets of vertical air photographs taken on 22.10.'52 and 18.2.'57 which were made available by Mr.

[1] The figures were obtained from records in the office of the Rural District Council in El Mieiliq. Those of human population were checked with census returns made available by D. B. Climenhaga, Chief Field Inspector of the Population Census Office, Khartoum. Those of animal population must be regarded with reserve since taxes are levied on livestock and the concensus of opinion among officials is that livestock owners have achieved some success in minimizing their tax liability.

P. E. T. Allen of the Survey Department, Khartoum. Of the two sets, the latter at a scale of approximately 1 : 25,000 was the most valuable but the former provided useful information regarding cultivation and the extent of flooding at a different time of the year. However, owing to the fact that neither date coincides with the maximum extent of riverain cropping it is likely that a larger area is devoted to crops, especially at low levels, than is shown on the map.

The primary intention was to indicate conditions at El Gedid and most of the field work was confined to village lands. The writer is well aware of the dangers in interpreting air photographs of areas which have not been studied on the ground and further work may reveal the necessity for revising parts of the map such as those covering areas on the other side of the river which have not yet been visited.

SOME ECONOMIC ASPECTS OF PRIVATE PUMP SCHEMES

by

Omer M. Osman

The overwhelming popularity of industrialisation which is sweeping all underdeveloped countries should not tempt us to overlook that at our present stage of economic development, agriculture still offers much higher returns than industry. It is true that agriculture has its own defects, the volume of its products and their prices being subject to wide fluctuations which subject the whole economy to serious instability. But to offset this instability and to maintain a more regular rate of growth, two devices, at least, lie within the sphere of agricultural policy. One is the diversification of products and the second is the stabilisation of the expansion of cropped area.

At present, not more than 15 per cent of the cultivated lands of the Sudan are irrigated, while over 80 per cent are in the rainlands. Both the area and the average yield of the rainlands have been continuously fluctuating due to the unreliability of rainfall, and to the greater elasticity of supply of their products. The irrigated area, on the other hand, has always been expanding progressively, and has more than doubled during the post-war years. As the water supply is more controllable, the products are superior in quality and in average yield and offer better chances for diversification.

This is not to suggest that present efforts aimed at expanding rainland agriculture should be discouraged, but only that the present 15 per cent ratio of irrigated land is rather unhealthy.

Recently published figures by the Ministry of Irrigation put the area of land suitable for immediate development at four million acres : three million for gravity irrigation and one million for pump scheme irrigation. The former creates no serious problem of organization after the outstanding success of the Gezira Scheme as an ideal system for large-scale agricultural production. But the expansion of pump schemes does ; and it is the concern of this paper to discuss some of these problems—with a bias towards the financial problem.

The private pump schemes in the Blue Nile province have been chosen as the subject of this study, because they are of a more homogeneous type in their products, organization and, perhaps, soil.

THE GROWTH OF PUMP SCHEMES

Since the establishment of the Gezira Scheme in 1925, most of the expansion in the irrigated lands has been in the field of pump scheme irrigation. The gross area under pump schemes in the whole country increased from 38,000 acres in 1925, to 180,000 in 1944, and by 1956 the number of pump schemes had exceeded 1,500, irrigating over 625,000 acres. The expansion in the Blue Nile province has moved at a more rapid pace, as shown by Table (1). This rapid rate of expansion has been maintained even during periods of declining cotton prices, and had a favourable stabilizing effect on the whole economy. For example, during the ten cotton seasons between 1947 and 1956, the Gezira cotton crop declined, from that of the previous year, on four occasions. On two of these occasions, the decline was more than offset by the expansion of the cotton area under pump schemes.

TABLE (1)

AREA AND OUTPUT OF LONG STAPLE COTTON IN THE BLUE NILE PROVINCE

1932—1956

YEAR	AREA		OUTPUT		TOTAL OUTPUT
	Pump Schemes *Feddan*	Gezira *Feddan*	Pump Schemes *large Kantar*	Gezira *large Kantar*	*large Kantars*
1932	3,591	193,979	15,513	805,051	820,564
1933	3,956	194,975	11,057	375,476	386,533
1934	5,447	174,912	17,406	409,960	427,366
1935	6,848	175,183	23,842	781,555	805,395
1936	8,117	184,740	25,095	687,660	712,755
1937	12,024	199,125	45,076	890,907	935,983
1938	12,545	208,357	44,973	957,394	1,002,967
1939	10,056	210,226	30,499	936,829	967,328
1940	12,631	211,259	28,969	810,097	839,076
1941	15,134	214,463	53,617	887,577	941,194
1942	15,082	216,951	40,978	873,081	914,059
1943	16,669	216,688	53,885	1,043,285	1,097,160
1944	16,251	216,894	41,429	668,552	709,981
1945	18,953	216,863	62,803	1,066,148	1,128,951
1946	18,282	204,899	47,368	686,783	734,151
1947	19,469	214,514	63,332	836,695	900,027
1948	21,851	216,973	71,740	*733,611*	*805,351*
1949	22,386	217,405	90,558	922,873	1,013,431
1950	26,275	217,451	108,076	994,957	1,103,027
1951	30,605	218,239	193,754	1,490,040	1,683,794
1952	42,946	231,773	*122,346*	*711,370*	*833,716*
1953	58,428	244,845	245,641	1,145,871	1,381,472
1954	64,992	245,118	283,389	*1,140,740*	1,424,129
1955	99,683	244,728	426,089	*1,052,186*	1,478,275
1956	113,883	248,911	537,247	1,191,189	1,729,236

N.B. Italic figures indicate declines in output since 1947.

Factors which have induced this rapid rate of growth of private pump schemes in the Province should be briefly discussed. Suitable land has always been abundant and free from most of the land tenure problems of the Northern Province. Water has never been a serious obstacle and the Nile Pumps Control Board has always been ready to grant licences to any applicant with a moderate degree of eligibility. Therefore, the deciding factor has been the availability of capital in the country and the level of cotton prices which determined the willingness of capital to move into agriculture. In the immediate post-war period, capital was available as a result of the war-time controls

which greatly curtailed consumption. Cotton prices, on the other hand, rose sharply after 1948 and have since then remained above the level which would guarantee a sufficient rate of return for any scheme with a reasonable degree of efficiency.

It is not easy to detect a straightforward correlation between the change in cotton prices and the expansion of pump schemes. Although prices continue to exert the main influence on pump scheme promoters, many other factors interfere to strengthen, offset or delay this price effect. The cost of constructing, running and maintaining pump schemes is a major factor here, and although these costs have been continuously rising since the end of the last war, there is no evidence that they have seriously reduced the margin of profits of the average scheme. The average yield per acre also seems to exert some influence on the attitude of investors, perhaps through its effect on the earnings of pump scheme owners and financiers.

Now assuming that a sharp rise in prices as that of 1948 (Table (2)), creates a higher demand for pump schemes and a willingness of financiers to provide the necessary capital, the actual increase in the cultivated land cannot take place before the lapse of at least two years. The increase in prices of cotton does not make itself felt until November, and is followed by a complicated chain of legal and administrative procedure ; the search for capital, the ordering of pumps and the construction of canals and houses. It is very unlikely that all these stages would be completed in good time to start the scheme by August of the following year. In some cases, the lag may become three or more years, due to shortage of labour or, especially in periods of import restrictions, to shortages of pumps or other equipment, or due to a sharp decline in cotton prices before the construction of the scheme is completed. An example is provided by the decline in the rate of pump-scheme expansion in 1954, following the collapse of cotton prices in 1953. On the other hand, the lag may be reduced to one year only, for example, when licences have been obtained without a definite plan for

TABLE (2)

THE RELATIONSHIP BETWEEN THE PRICE OF COTTON AND THE EXPANSION OF PRIVATE PUMP SCHEMES IN BLUE NILE PROVINCE

Year	Cotton Area of Private P.S. Feddans	Price of Cotton LE/ton	Yield Large Kantar per feddan	Change	
				in price	in cotton area
1946	13,574	90	2·7		
1947	14,912	160·4	3·7	+ 70·4	+ 1,338
1948	15,758	308·6	3·2	+148·2	+ 846
1949	16,000	291·8	3·2	— 16·8	+ 242
1950	19,718	343·7	3·9	+ 51·9	+ 3,718
1951	24,000	476·8	6·6	+133·1	+ 4,282
1952	34,290	524·9	2·7	+ 48·1	+10,290
1953	50,212	296·5	4·0	—228·4	+15,922
1954	56,704	358·3	4·3	+ 61·8	+ 6,492
1955	91,310	*	4·2		+35,606
1956	105,510	*	4·8		+14,200

construction. This is illustrated by the record growth of pump schemes in 1955, in response to a moderate recovery of prices in 1954. One can only suggest that most of these schemes which appeared in 1955, were not completed in 1954 because of the discouraging prices of 1953.

The role played by the Government in promoting this rapid rate of expansion, through its more liberal licensing policy and its agricultural loan policy, should not be underestimated. The Government's attitude helped the economy to respond freely to the favourable conditions for expansion. If these favourable conditions continue for some time, the remaining one million acres allotted to pump schemes should come under cultivation in a relatively short period.

This calls for a discussion of the efficiency of these schemes and some of the problems which retard this efficiency.

THE EFFICIENCY OF PUMP SCHEMES

Column (5) of Table (3) shows that the average yield per acre in the Gezira Scheme is appreciably higher than that of all pump schemes in the province. This only confirms the well-established fact that gravity irrigation schemes should be preferred, wherever possible. But there is no competition for land between pump schemes and gravity irrigation schemes in these areas which have been allotted for pump schemes. If the choice is between public enterprise and private enterprise, then column (6) shows that the average yield of private schemes is slightly lower than that of the government schemes. But it should be noted here that the figures for the government schemes are more representative of these schemes as they are very few in number, with very little difference in size or other advantages. The private schemes, on the other hand,

TABLE (3)

THE AVERAGE YIELD* PER FEDDAN IN THE GEZIRA SCHEME, GOVERNMENT SCHEMES, AND PRIVATE PUMP SCHEMES IN BLUE NILE PROVINCE

Year	Gezira Scheme (1)	Pump Scheme			All Pumps as % of Gez. (5)	Private as % of Govt. (6)
		Govt. (2)	Private (3)	All (4)		
1946	3·4	2·4	2·7	2·6	77 %	114 %
1947	3·9	3·1	3·7	3·3	84 %	120 %
1948	3·4	3·5	3·2	3·3	96 %	91 %
1949	4·2	4·5	3·2	4·1	95 %	89 %
1950	4·6	4·6	4·0	4·1	90 %	87 %
1951	6·8	6·4	6·6	6·4	93 %	103 %
1952	3·7	3·4	2·7	2·8	77 %	81 %
1953	4·7	5·2	4·0	4·2	90 %	77 %
1954	4·6	4·2	4·4	4·3	94 %	104 %
1955	4·3	5·0	4·2	4·6	108 %	84 %
1956	4·9	3·5	4·8	4·7	97 %	109 %

* In large Kantars.

amount to several hundreds, varying greatly in size, organization and financial resources. Over 70 per cent of these schemes are of a very small type, under 300 acres gross area ; while those comparable in size to government schemes amount to less than 5 per cent. Hence one can safely say that the average yield in these larger, well-managed and well-financed schemes tends to be equal to, if not greater than, that of government schemes. And accordingly, the yield tends to be much lower in the smaller schemes, which suffer greatly from the lack of adequate finance and managerial skill.

But the average yield per acre is not a sufficient guide for the measurement of efficiency. It only shows the gross returns of the schemes without telling us anything about the cost of producing these returns. There is evidence that the average construction costs per acre of the gross cultivable area, fall rapidly as the size of the scheme grows. For example, while the cultivable area of a 12 in. scheme is five times the cultivable area of a 6 in. scheme, the total capital costs of the former are only three times as great. The average costs of running a scheme, also tend to fall as the size of the scheme grows. Hence, technically, the optimum size of a pump scheme tends to be much larger than any of those operating in the Province. But when the standards of the existing managerial skills, the ability to obtain capital and the topography of the region are taken into consideration, one should accept that some of the largest schemes in the Province are of an optimum size. The majority of the schemes are well below the most efficient size.

It should be interesting here to investigate why such a large number of smaller schemes operate in the Province, entailing a waste of much-needed resources and lower returns for the capital and labour of their owners and tenants. Such factors as the desire for independence, the fear of exploitation, the unsuitability of land for larger schemes, should account for the smallness of some of these schemes. But there is empirical evidence that the imperfection of the capital market is largely responsible for this dominance of the small scheme. The problem is not merely a shortage of capital, because less capital would have been needed had the average size of the scheme been larger, but the way in which capital flows into these schemes.

This invites a brief description of the financial set-up of these schemes :

THE FINANCIAL SET-UP OF PRIVATE PUMP SCHEMES :

All private pump schemes in the Blue Nile Province can be broadly classified into three types in so far as their relationship with financiers are concerned :

Type A : OWNER-FINANCED SCHEMES

Type B : PARTIALLY OWNER-FINANCED SCHEMES

Type C : OWNER-FINANCIER PARTNERSHIP SCHEMES

Type A : THE OWNER-FINANCED SCHEMES

Only a very few schemes depend entirely on the resources of the owner. These are either rich merchants or successful pump-scheme owners of the pre-war period who re-invested their profits in new schemes. This type also includes a few well-to-do " saqia " owners whose own resources were sufficient to convert them into small pump schemes.

But still, none of these is completely independent of financiers. The majority have to rely upon them for crop-finance. None of them can undertake the ginning,

transporting and selling of cotton—an operation which, for technical as well as economic reasons, cannot be carried out by a producer of under a certain quantity. These services are performed by financiers who, in return, charge a commission on the gross value of cotton—varying from 2 per cent to 6 per cent.

The management of these schemes is often in the hands of the owner and they enjoy a reasonable degree of efficiency. It is true that the smaller schemes are unable to hire skilled managers, but it seems that the owners' incentive compensates for this disadvantage.

Type B : THE PARTIALLY OWNER-FINANCED SCHEMES

Here, the relationship between the owner and the financier is similar to a borrower-lender relationship. The main difference between this type and Type A, lies in the ability to provide sufficient capital for the construction of the scheme. Here the owner, whether an individual or a company, is expected to provide only a proportion of the capital costs. The financier provides the remaining sum and the working capital and, in return, charges a commission on the gross value of cotton or a rate of interest on the loan. The owner is under an obligation to sell his crop through the financier, during the period of contract or until the loan is paid off (whichever is the longer). The terms of finance vary greatly, depending on the size of the scheme, the degree of dependence on the financier and the social standing and credit-worthiness of the owner.

A large number of these schemes are owned by large agricultural companies which enjoy a sound system of management and are, therefore, amongst the most efficient schemes in the province.

Type C : THE OWNER-FINANCIER PARTERNERSHIP SCHEMES

This type take us to the other extreme. All that is required of a licensee is to obtain a licence, and the financier provides all the necessary capital.

This system is relatively recent as it was introduced during the "cotton-rush" of the early 1950's. The record cotton prices, together with the availability of capital, created a high demand for pump schemes. In those circumstances, the problem was the ability to obtain licences. To be eligible for a licence, that is, to be a man of some influence in one of the areas of the Province, was sufficient to guarantee a 50 per cent share in the net profits of a scheme.

In the earlier years, the management of most of these schemes was left to the licensees. Their inefficiency as managers was not revealed until the sharp decline in cotton prices of 1953, when the financiers had to take over the management. As a result, many of these licensees abandoned their schemes and knew very little or nothing about their affairs. Complaints of excessive costs of management and long delays in settling accounts were often raised against financiers. All this resulted in a bitter feeling mounting in the Province against financiers.

Generally, most of these schemes are small or medium-sized and are amongst the most inefficient schemes of the Province.

THE FINANCIERS

The financiers of private pump schemes in the Province, are relatively few in number, and fall within two main categories : (a) Sudanese financiers, and (b) foreign financiers. Neither of these can, *strictly*, be defined as a " financial institution," in the sense of specializing in providing these schemes or others with funds.

The Sudanese financiers are themselves big cotton growers, and the expansion of their schemes is limited because of their inability to obtain more licences. Hence their interest in a partnership system with those who are eligible for licences, and their interest in financing other schemes.

The foreign financiers, on the other hand, are mainly agents of foreign importers of cotton, and their interest in pump schemes is to ensure an adequate supply of cotton for these importers.

This is not the only reason justifying the division into two separate categories. The Sudanese generally charge a commission on the gross value of cotton, while the foreign financiers charge a rate of interest on their advances. One reason for this is that the Sudanese, for religious reasons, cannot charge a direct rate of interest. Another explanation may be that the Sudanese deal more with the smaller schemes, where the risk of default is greater and, therefore, a high rate of interest is best concealed by a charge on the gross value of cotton.

In both cases the borrowers are obliged to sell their cotton through the financiers : the Sudanese to charge their commission and the foreign financiers because they are agents of cotton importers. This factor prevented the establishment of local cotton markets in the Province. Some of the foreign firms opened a few offices to purchase cotton from the non-committed schemes, but were strongly resisted by other financiers and some owners, who wished to prevent some of their unsatisfied debtors or tenants from selling their cotton illegally to these offices.

A point in favour of the Sudanese financiers, from the point of view of their clients, is that, being themselves cotton growers, they are interested in higher cotton prices. The foreign financiers' interests, being agents of cotton buyers, should be in lowering cotton prices, and hence should conflict with those of their clients. But as the clients of these foreign financiers are large and well-informed companies, this disadvantage is only theoretical.

THE COMMERCIAL BANKS

The role of the commercial banks in the finance of pump-scheme development has, for a long time, been greatly influenced by the British banking traditions of refusing any long or medium-term commitments in the finance of agriculture or industry. Nevertheless, commercial banks are the ultimate source of funds which finance pump schemes in the country, the financiers only acting as intermediaries between the banks and the scheme owners. Owing to their strong financial standing, the financiers are able to borrow at relatively low interest rates, and re-lend these funds to pump scheme owners at higher rates.

In more recent years, some non-British banks extended their business to the Sudan and were more willing to follow the Continental traditions of direct long-term commitments. At the beginning, this took the shape of lending, but later, still following the Continental and Egyptian traditions, there was more interference in the management of their borrowers' schemes.

The amount of funds which all these banks advance to finance pump scheme development is determined by the resources available to these Banks in the Sudan, by the credit standing of the schemes' financiers and ultimately, by the credit standing and profitability prospects of the new schemes. Given the amount of these funds, their effectiveness in pump scheme expansion will be determined by the earnings of these

schemes, that is, by the level cotton prices and yields, in relation to the cost of constructing and running pump schemes. Hence, during periods of higher prices, debts are repaid and, thus, made available for new schemes.

THE GOVERNMENT LOAN POLICY

The Government loan policy is one of the most important media through which it influences pump-scheme development in the country. The Agricultural Loan Programme was first launched in 1949, and, as would be expected, started rather conservatively. The period of loan was fixed at three years, to be paid off in three annual instalments, the first falling due twelve months from the date of the advance. It was assumed that the borrower would be able to finance the earlier stages of cultivation out of his own resources. Only registered land (freehold or leasehold) whose value was 50 per cent in excess of the loan was accepted as security. Failure to pay the instalment within seven days was, then, thought to be sufficient to raise a civil suit against the borrower.

But in practice these regulations were never strictly observed. No civil suits were brought against borrowers even if they failed to pay for years. Even the security of the loan was never the deciding factor. Instead the soundness of the development project and the character, integrity and agricultural ability of the borrower came to have more influence on the Agricultural Loans Board. A further relaxation in the regulations was induced by the serious drop in cotton prices of 1953 which led to the contraction of funds available for pump-scheme finance.

Land to be developed (even if unregistered), together with other types of assets, were accepted as security. Borrowers were expected to provide from their own resources a smaller margin than before. The period of the loan was extended from three to six years at 6 per cent and 8 per cent rates of interest respectively. Even the condition that the scheme should be free from any other debts, was removed and loans were allowed for the paying off of other debts. This made the loan policy much more effective than before, by increasing the number of eligible borrowers. As a result, the total amount of loans in 1956 amounted to over L.S. 750,000 in the whole country.

CONCLUSIONS

The rapid growth of private pump schemes in the country in the past few years, and the great role they have played in the expansion of the whole economy, should not tempt us to ignore the precarious foundations on which this important sector of the economy stands. The high rates of profits obtained by a large number of these schemes during a period of exceptionally high cotton prices should not be taken as a measure of their efficiency or as an indication of their ability to survive. When cotton prices fall and settle at a relatively lower level, neither the owners nor their tenants are likely to accept a severe reduction in their standards of living. Instead, they may prefer to live by consuming their capital resources, neglecting the maintenance of their schemes and in the end failing to replace them.

The larger schemes should be able to survive and to maintain a sufficient rate of profit. But the danger is greater in the case of the smaller schemes and most of the medium-size schemes, which were constructed at higher average capital costs, as a result of the imperfection of the financial markets which limited their size.

Unfortunately, the government policy was solely directed towards the expansion of the cultivated area, without any serious consideration of the most efficient size. The government loan policy was forced to concentrate on the smaller schemes which were favoured by the licensing policy. The Nile Pumps Control Board, which is entrusted with the best utilisation of the limited quantity of Nile waters available for pump schemes, has always been too much influenced by the possible social and political repercussions of its policy. The waste of resources involved in the reduction of the average size of pump schemes was preferred to the social and political evils of concentrating large areas of land in the hands of a few owners of optimum size pump schemes.

This attitude was expressed clearly in a statement issued in December 1955, clarifying the government pump scheme licensing policy :

1. Priority is granted to government schemes, followed by co-operative societies, big companies, partnerships and small companies.

2. No private scheme is to be allowed to expand into lands which could be used by a new scheme.

3. No existing licence in unregistered land is to be extended, so that the scheme could be given to a tenants co-operative.

The good intentions of this policy cannot be denied. It is, indeed, desirable that the benefits of any expansion should be shared among the largest number of citizens. But in a country like the Sudan, where the most serious problem is the shortage of resources of all types, more consideration must be given to the idea of the most efficient use of resources. A compromise between the objectives of efficiency and equality is not impossible. In the absence of a positive policy to expand government schemes, as a result of the larger development projects, co-operative schemes may provide the compromise. But co-operative societies have not yet proved their ability to undertake such a task. What is required, therefore, is a more drastic interference by the government in this field, to promote large-scale co-operative schemes and to provide them with adequate finance and managerial skills.

Otherwise, if the existing system is allowed to continue, too high a price will have to be paid, by the shareholders of co-operative societies and by the owners and tenants of the other smaller schemes, for independence and equality. The whole economy will be wasting, in pump scheme development, valuable resources which can be more productive in other sectors.

GIRAFFE HUNTING AMONG THE HUMR TRIBE

by

IAN CUNNISON

The Humr tribe of Baggara Arabs of South-Western Kordofan are skilful hunters with gun, and with horse and spear, and their land is rich in antelope, giraffe and elephant. Those who possess rifles, which for the most part are French and English relics of the nineteenth century, prefer hunting with the gun ; but horse and spear are easier to obtain and most hunting is done in this way. Antelope—hartebeest and roan—may be speared on foot. This method is used when animals are resting in the heat of summer afternoons. It is said that the " grandfathers " of the Humr speared giraffe on foot in mud, a method still said to be used by the neighbouring Bul Nuer. Generally it is not considered worth tiring out a horse for a mere antelope ; and there would be considerable danger in this form of hunting for roan at bay use their horns swiftly and efficiently. If, however, an animal is seen to be lame, chase may be made on foot and the kill is generally swift. Buffalo are speared from horseback. If a number of horsemen together come across a herd of buffalo with young, they charge uttering loud whoops ; the adults run faster than the calves, and the calves, which having no horns are harmless, are speared.

The main sphere of hunting with horse and spear is large worth-while game, giraffe and elephant. Of these, the greater and more worth while in Humr eyes is the elephant, which is the emblem on the flag of the Dar Messiriya Rural Council. Praise for killing an elephant goes to the bravest and cleverest man on the expedition : praise for the killing of a giraffe goes not to the rider but to the horse primarily, and secondarily to the owner of the horse. The giraffe hunter has to be fearless and single-minded. The elephant hunter has to have these qualities and be cunning into the bargain. However, giraffe are hunted more frequently than elephant for at the time when elephant are in Dar Humr the tribe has moved north with the cattle, and an elephant expedition may last a month or more through trying conditions of rain, long grass and mud. Giraffe on the other hand are often within easy reach of the cattle camps in summer. Many giraffe are killed annually, most people have been on some giraffe expedition, and the most common subject of Humr camp-fire conversation is giraffe and giraffe horses. These conversations are generally in praise of horses and of the number of tails they brought home. From an early account we know that Baggara generally have long been hunting giraffe.[1]

The Humr giraffe is usually called *zeraf*, although it also has a number of fanciful names : *boraboch*, *el adra'* (the chequered) and *abu regeba ṭayily* (the long-necked : *ṭawila* becomes *ṭayily* in the Humr dialect.) It occurs in great numbers, although its distribution now is more restricted than in the past. In the Babanusa sandy area in the north-west of Dar Humr it used to be hunted ; but here it is now confined to a few spots about the Humr-Hamar boundary. It occurs, however, mainly in the south and outside the borders of Kordofan in the sparsely populated north-west corner of Upper Nile Province, the country of the Rweng Dinka and the Bul Nuer. Giraffe move from there in the early rains and distribute themselves over the wide area known as the Bahr el 'Arab, penetrate north over the Regeba Zerga and Regeba Umm Bioro,

[1] Sheykh Mahommed Ibn 'Omar el Tunisy : *Voyage au Darfour*, 1845, p. 309 : "Lorsqu'un des cavaliers aperçoit une girafe, il se lance à la poursuite ; une fois qu'il en est approché il ne suit plus la trace pied à pied, mais il la suit par le flanc ; lorsqu'il se trouve de front avec l'animal, presque côté à côté, et qu'il a ainsi l'animal à la portée de son bras, il lui décharge un coup de sabre sur les jarrets, et l'arrête sur place".

enter the Goz district between there and the Muglad, and reach the north-eastern regebas in the neighbourhood of Kwak and Keylak. For the most part they leave these areas after the rains, leaving behind them their tracks in the drying mud which remain until the following rainy season. Some, however, always stay behind and even in the Goz there are pockets of them throughout the summer as long as the water lasts out. Their moves are thus roughly parallel to, but south and south-east of, the moves of Humr with their cattle.[1] The main hunting takes place in the Goz on the move south in December, throughout the summer camp areas from January to May and again in the Goz during the move north in May and June. The rains do not prevent giraffe hunting. Giraffe have the advantage in mud but on sand or *gardud* flats the conditions are much the same as in summer if the grass is not too long.

In recent years, since giraffe hunting has been controlled by the Government, the official hunting area is restricted to a district in Upper Nile Province north-east of the Regeba Zerga. At the time of writing the whole Messiriya tribe (Humr and Zurg) has an allocation of 60 giraffe a year. The Messiriya Zurg have few horses and hunt little, and their share is for the most part divided among the Humr. With luck, one omodiya may have licences to kill five giraffe in a season. Humr do not see why man should license what God has given them, and so there is some giraffe poaching. The threat of discovery is simply another thrill added to those inherent in the hunting itself. The restriction on giraffe hunting was, while I was in Dar Humr, the biggest argument the Humr had with the administration.

The Humr giraffe occurs in a variety of colours. The background to the blotches is fairly light in colour. The blotches themselves vary from light brown in young males and females to dark liver-brown in old males. In old males the interstices between the blotches may be dark, and Humr talk of a giraffe like this as *azrag*. Young giraffe (*huwar*) are generally orange. The colouring is admirably suited to the talh forests in which they mainly live, since the bark of this tree is liver-coloured, and the tree when its bark peels off is light orange. I have missed seeing giraffe at close quarters in these surroundings. Generally, however, the animal gives its position away by wagging its tail. The male (*jamal*) is a stout animal and larger than the female (*naga*) which is extremely graceful and every bit as swift as the male. Generally a number of small parties of giraffe, from three to six or seven in number, make up a group scattered through forest which comes together to form a herd of sixty or more when they emerge into the open plain. In an area without open plains they do not seem to unite in large herds like this.

A giraffe expedition is not lightly undertaken. The giraffe is a very swift animal, and the length of its stride takes it quickly over ground unsuitable for other animals, including horses. Giraffe hunting is not simply a matter of happening to see a giraffe from horseback and chasing it (as the quotation from El Tunisy might seem to suggest). Unless the horse is a very good one and has been specially prepared it will never reach the animal. As Humr say, a giraffe does not eat grain : if it did so, no horse would ever reach it. The intending giraffe hunter has first to get himself a good horse : one that is swift ; one that looks where it is going when galloping and does not stumble into pot-holes ; one that is stout-hearted and will not shy from the giraffe on reaching it. Horses are reared by some Humr and bought and sold freely. Other horses are imported from Dar Rizeygat in the west. Rizeygat owners bring them in poor condition, but there are Humr who are excellent judges of the shape of horses. One thin beast was bought from a Rizeygat trader in 1954 for a bull (value £10) and £5 cash. It was fed and after four months killed two giraffe, after which it was confiscated

[1] Described in "The Humr and their Land", *S.N.R.* XXXV, 2, 1954, pp. 50–63.

for poaching. The owner managed to recover it, buying it through an agent in a government auction for £27. The following year it killed five giraffe in two short expeditions, and the owner has since been offered £40 for it.

A horse intended for giraffe is treated in a very special manner. It has to be carefully watched all the time. It is not used for herding cattle, but only for going lightly and directly from place to place. Great care is taken not to work it hard on a full stomach, for this produces *bugur*, a very mild form of paralysis of the legs whose effect may not be seen until it has to gallop hard for a stretch. A horse with the slightest trace of *bugur* will never reach a giraffe. As a preventive against possible *bugur*, and generally to keep it fit, it is periodically given sugar in water to drink, and a bottle of simsim oil or about five pounds of pounded simsim. Shortly before the expedition it is always given simsim. At all times its grasses are carefully selected, and it is regularly given grain two or three times a day. The ideal is to build up a great amount of flesh which is starved off just before the expedition. Flesh is built up by giving the horse milk or sour milk daily, which many of the rich cattle-owners are able to do. Then at the time of the expedition it is starved, eating grain only until there is little flesh left on rump and neck. Humr say that when they do this all the strength from the flesh enters the marrow of the bones and makes the beast strong. The horse is kept on a special diet until the expedition is over. In the camp it is tied to a post or tree with the ground carefully swept clear. It is never given hay, but may receive small bundles of short fresh grass if there is any at hand. If the horse is a good one, and these observations have been carried out, the horse may kill. Theoretically, as it were, on smooth and treeless ground, it is bound to kill. But there enter many other elements which make the result of a hunt a chancy matter.

In former days, horses might have been kept in readiness in the cattle camp, and giraffes hunted when sighted from the camp; but for various reasons this is now impossible. It is usual nowadays to mount an expedition lasting two or three weeks and going out of the districts of cattle, and of Arabs and Dinka. Some districts are well known for their abundance of giraffe, and hunters have districts which they know well and favour, being roughly in areas associated with moves of their own camps. Knowledge of the ground is a most important element in giraffe hunting. It is useless to go just with horses. An expedition may be formed by close relatives or friends with suitable horses, agreeing on time and place. Formerly great expeditions of ten or twenty horses used to be mounted, but today the number is usually from one to five. It takes ten bulls to carry a fresh giraffe, and at least two to carry the dried meat of one animal. So usually at least ten bulls with their riders accompany an expedition, and often considerably more. The composition of the party is not, however, planned in advance. It is made up of people who happen to want to join it. Horse owners and riders make a point of having a bull or two to bring back their automatic share of the meat. Anyone else from the camp who has a suitable animal may join. If the riders or owners are from more than one cattle camp, each may have followers. Those who accompany the expedition and who have no special claim to a share of the meat are known as *umm gharagha*. They are hangers-on, who help in the work of the giraffe camp and always manage to come back with a certain amount of meat. The hunters and owners are known as the *nas el kheyl*. A rider is *ṭarrad*; and the whole expedition is *dermada*. Sometimes an arrangement is made in order to be able to dispose of the meat on the spot: a man may accompany the expedition who is prepared to buy the giraffe where it falls and to make arrangements for transport. Followers of this kind are *mendacha*.

The expedition from the time it sets out from the cattle camp is *dermada*. Any camp which is made during the expedition, but particularly the base camp for hunting, is known as *dankuch*, although it is referred to often simply as *ferig*. The *dankuch* has a character all of its own. According to the number of cattle camps from which its members are drawn, it is composed of one or more groups. A group has as its centre the *ḍorra*, a tree under which the men shelter, sleep and eat, as in the cattle camp. Women present group themselves in twos and threes and either build normal Humr tents in a very rough fashion, or else make tent-shelters of sticks and any suitable material they can lay their hands on : cloths, groundsheets, mats, grass bull-saddles, the whole affair a patchwork of colours. Here they cook, eat and drink, talk and sleep. Women accompanying the expedition as *umm gharagha* are not necessarily the wives of men present. It is usually unmarried girls and divorced women who go, for a *dankuch*, with its hard going, lack of milk and hard work on the giraffe is an unsuitable place for small children. Since the expedition is usually protracted and men do not cook it is general to have women present. After meat has been killed, frames are erected from trees for drying it, and the whole place is red with hanging meat. When the hunters are out there is a great air of expectancy and conversation is at a minimum, and there is nothing for the *umm gharagha* to do. It is only after the kill that the place becomes active and excited. Then the hunter horses champ beside the men's *angereybs* ; the colourful meat and portions of giraffe skin are hanging to dry, giraffe ribs are braised over open fires, hawks and vultures try to steal the meat, and the talk s all of hunting technicalities.

Camp set up, hunting can begin. My own experience has been to follow with the hunters to see how the process is carried out. Although most Humr are, so to speak, born in the saddle, only a few have the necessary degree of skill and daring to chase giraffe over rough ground. On smooth ground it is another matter, but giraffe are usually on rough ground ; and if they are on smooth they go into the rough when chased. Giraffe mainly inhabit three kinds of ground : talh forest, or a mixture of talh forest and open plain, or treeless plain (*sahaly*). The ground itself may be perfectly smooth, but more often it is " choppy " like the sea (as on *feyḍ*), potholed, or covered with holes made by elephant tracks left from the previous rains. There may be long grass or a thick undergrowth of thornbush. Ground which is frankly impossible for giraffe hunting is potholed *feyḍ* (which in the rains is entirely under water) ; or where thick undergrowth blocks the view, or allows the giraffe to stride through it while it impedes the horses. Very long grass and very dense forest also rule out hunting. Other types of ground are in varying degrees possible. Few obstacles deter giraffe, and a hunter's skill consists mainly in being able to keep his horse galloping at full pace through them, and in his ability to guide his horse through the trees so that not only the horse (which can look after itself) but he also, who is higher and wider, will not hit a branch. Falls are of common occurrence, but trees are the more dangerous hazard, and one or two hunters are killed in most years by hitting them. His daring consists mainly in not caring whether his horse at full gallop falls into a pothole hidden by undergrowth. Equally important is his knowledge of the ground, for by charging a giraffe from the right direction he has a chance of controlling its movements onto ground which suits him.

The *dankuch* has to be near water for bulls and domestic purposes, and this may mean that it is some miles away from where giraffe are to be expected. The hunters set out together after drinking tea in the very early morning, in the period of the night known as *dulghush*. This is well before sunrise. Just about sunrise they stop in a suitable place to tighten the girths, which had been tied in darkness, to inspect the

harness and adjust their clothing. The hunters' dress is shorts with either a pullover or a short jibba with the sleeves tied at the back: in fact any old clothing which will not flow or get caught in thorns. They also wear puttees, which they secure firmly at this halt by tying round them short strips of talh bark. Their sandals they leave behind, or tie to their saddles in order to get a good grip of the small triangular stirrups with their toes. They go bare-headed. They wear also a knife in its sheath strapped to the left arm, and carry a spear. This is the *chelekaya*, the 10- or 11-foot weapon normally carried by Humr men. They mount and seek giraffe.

On suitable ground giraffe do not take much finding in the early morning. If there is forest and plain, they seem invariably to spend the night on the fringe of the forest and to be there at daybreak, and to take to the forest in smaller groups in the heat of the day. When giraffe are sighted, the first consideration is whether or not the ground is suitable. If the nature of the ground makes it obvious that the giraffe will escape, chase is not given. Nor is it given unless all the hunters agree it is suitable. If they decide to give chase, they lower their spears from the left shoulder to the galloping position in their right hands, in which the whip is also held. The reins and bridle rope are held in the left. Although Humr giraffe are very wary of horses (although not so much of people on foot) and start running at four or five hundred yards, it may be possible to stalk into a better position before charging. This may be done by dismounting and leading the horses through long grass, or by making a detour through forest. The stalk, if mounted, is done at a canter, with the man who first sighted the giraffe usually, but not necessarily in the lead. When they reach a suitable position they break into a gallop. The horses race neck and neck, their riders carrying long spears, over bad ground with holes, cracks, thornbush, long grass or trees. They go at full gallop whatever the nature of the ground. The rider keeps his eye on the giraffe, and leaves the detailed choice of ground to the horse. The early part of the chase is a race to get into a leading position as they approach the giraffe. If it becomes obvious that one or two horses are out of the running, their riders fall out. Perhaps one or two horses will reach the scene. The next operation is the spearing. On getting near, the rider passes his spear over to his left hand, whips the horse on and guides him in towards the left rear of the giraffe. Then he passes the spear over again to his right hand, and with both hands at the butt of the spear and the left still holding the reigns he jabs the giraffe's back leg. One powerful jab is sufficient. The giraffe spills blood, slows down and comes to a stop. The rider dismounts at a suitable tree if there is one and ties his panting horse. As the giraffe weakens it turns and sways, and may kick out with its front legs. The hunter takes his spear and with the ritual *bism Allahi Allah akbar* kills it by spearing in the throat (it is not necessary in the case of big game to slaughter with the throat facing east). The giraffe soon falls. The hunter shouts as loud as he can to announce his position to the others who are probably widely scattered, and they come to him.

The chase varies in length, according to the nature of the ground and the amount of start the giraffe has, as well as the horse's speed. It is seldom less than a mile and a half. Although in the open the giraffe has a longer start, it is no advantage to hunt in forest because of the detours necessary round trees. A small group of giraffe usually runs together, but a large group usually breaks into two. If this is so, the horses also may split up. Again, if there are many giraffe and one horse is going particularly well, its rider may simply stab one giraffe leaving its killing to those following behind, and himself go on to stab another. If his horse is very fit, he may, after he has dismounted, undertake one or two more chases on the same morning.

If the kill takes place on ground unknown to the hunters and far from camp, they make a careful note of its position by taking bearings from various landmarks. In the Goz, where the ground is sand, they may cut off a foreleg and dangle it from a saddle, and the hoof leaves a trail from the corpse to the camp. The dead animal is always referred to as *seydy*, which means simply a game animal. When the animal is killed no time is wasted, for the sun is up, the horses are tired, the hunters thirsty (they carry no water with them). The hunter cuts the tail off the giraffe and dangles it from the left back of his saddle. An incision is made on the animal's back and a strip of fat taken out as an indication to the people of the camp of the quarry's quality : the fatter the better. *Abyaḍ min es shahm*—white with fat—is the best description one can give of an animal. The hunters then cut long dry grass and cover the beast with it to keep vultures away ; or if grass is not available they tie a turban over it as a pennant to flutter as a scarecrow. Having done this they return to camp.

Those awaiting in the camp are expectant to see whether or not a rider returns with a tail on his saddle and his spear red. About fifty yards away, the riders dismount and lead their horses to the tree, or if the ground is suitable a successful rider may gallop into camp. But usually, successful or not, the entry is solemn, the only signs of pleasure at a kill being respectful shaking of hands with the successful hunter. The *umm gharagha* take charge of the horses and tie them to their posts. After half an hour's rest the horses get grain, and about an hour later are watered—water being brought to them at their posts. The hunters sit at the tree on angereybs, and by degrees loosen their clothing and drink water. The women produce for them a special food eaten only in giraffe camps called *ababit*—balls of millet meal in *'aradeyb* (tamarind) water, which at once quenches their thirst and satisfies their hunger. Then, over tea, the story of the hunt comes out.

If bulls are scarce and water is close at hand, the giraffe meat may be dried where it was killed. But usually the fresh meat is brought to the dankuch and dried there. Soon after the news of the kill reaches camp, the bulls are brought in from grazing, or at least the ten or twelve of them necessary to carry the meat. They set off for the animal in the middle of the day, leaving behind just a handful of people to look after the camp. The hunter usually leads the bulls to the place, while the other hunters rest. The owner of the horse probably attends also for the giraffe belongs to him and he supervises the division of the meat. To skin and dismember a giraffe takes upwards of three hours with many people working on various parts of the carcass at once. So it is normal for the skinning party to sleep at the animal. If the animal is left uncut till the following day it becomes high, so the operation starts as soon as possible.

If mendacha accompany the party, they buy the whole giraffe except the tail which goes to the owner of the horse ; the money they pay for it is divided between owner and rider. If there are no mendacha (which is the usual case) the top back leg, as the giraffe lies, goes to the rider, along with half of the ribs and two delicacies, the *miheyliya*, a lump of tender meat under the ribs and the *derabt el shok*, a similar piece from the neck, although these may find their way elsewhere. He also gets half of the *gelb*—heart, liver, great intestine, etc. The owner of the horse gets the lower back leg, half of the ribs and half of the *gelb*. The rest of the animal belongs to the owner to dispose of as he likes except that the hide from the two allocated legs belongs to himself and the rider. A giraffe is said to have five " legs " the fifth being the rump which by its quantity is equal to a leg as a present. There is no set arrangement for the division of the rest of the meat. Everyone in camp is certainly given a share, although for

instance the close female relative cooking for the owner, or a brother of his, would be likely to get a leg or part of one.[1]

A giraffe has six main hides : the four upper legs, the neck and the belly. The giraffe's body being short relatively, the front and back " legs " are made to meet on the back. The neck hide is removed by being cut along the mane. The belly hide is a rough square bounded by the leg hides. Hides from lower legs are separate but small. The giraffe tail belongs to the owner of the horse.

As the giraffe lies, first the upper parts of the hide are cut, the meat is removed from the upper portions of the carcass and placed in piles according to the parts they came from. These piles are then divided by the *'ud* system equally among those who have a share in them. Each person presents someone with an object who then gives them to a neutral. An appropriate number of piles having been made, the neutral then places the objects each on a pile of meat, and their owners claim them. When the meat has been cut from the top, and the upper limbs removed, all hands available take hold of the remains of the beast and turn it over. The remainder is then cut up.

The chunks of meat are cut into long knobbly strings, and hung over branches, to start the drying process. From now on all the driable meat has an owner and is cooked only for him, although all the dishes are shared by all present. There is a great feast of meat and tea. The ribs are braised over an open fire—giraffe ribs thus treated are the sweetest meat I know. Another delicacy is made on the spot. This is *umm nyolokh.* It is so delicious that many say it is the real reason why they hunt giraffe. The liver is braised, and then pounded with a shinbone on the skin of a lower leg, and put into a bowl. The bone is then cracked open and the marrow extracted and mixed with the liver. Salt, red pepper and dried and pounded onions are then added and the mixture is eaten, supped or drunk according to the consistency which results.

The following day, the giraffe is taken to the dankuch, meat, skin and bones. Only the hooves and skull remain on the site. Other foods are made immediately : *tukuru* (millet meal which absorbs the juices of the meat cooked under it) and *mendusa* (dried meat pounded and shredded in a mortar). Various parts of the *gelb* are cooked together, and the *musran* (great intestine) is regarded as a delicacy. Each person erects a frame on which to dry his own share of the meat.

As the hunt progresses, the camp may move site ; but it continues until grain runs short, or the horses are tired, or there are no giraffe. Very often the expedition ends up hungry : grain is severely rationed, and a diet of dried giraffe and water, however much is taken, fails to satisfy. Tea and sugar are not taken in large enough quantities to last out, and tempers in the end become frayed—an automatic reaction to lack of tea among the Humr. Back at the cattle camp the hunters are welcomed, although the women do not welcome them unless they have been successful.

The giraffe has many uses. The main one of course is food. The dried meat is pounded as required and made into *mulah,* the sauce that goes with the staple bulrush-millet dish. Giraffe relish is much desired by Humr. It differs from relish made from other dried meat because cattle and other game are skinned immediately on death. Giraffe always waits some hours unskinned, usually in the heat of the day, and so the meat is always slightly gamey, and the sauce unmistakable. The dried meat alterna-

[1] This division tallies closely with the account given by R. Davies, in his article "Elephant and Giraffe Hunting among the Homr Tribe", *S.N.R.*, II, 1919, p. 18. He points out that the hind legs are distinguished from each other because the lower leg, being bruised in the fall, does not make such good biltong. Davies also drew attention to the common arrangement whereby horses may have two owners. Joint owners take profits from giraffe hunting year about.

tively may be sold to merchants in any of the markets. For the very reason that the meat is slightly high, the price is usually a piastre a pound below that of other dried game. By drying a whole giraffe and taking it to the market, the owner can make about £10 from a male and £8 from a female, although the price varies with the season. It is highest in winter when the giraffe seem to be at their fattest, and lowest in the rains when the drying process is not so satisfactory. Alternatively the giraffe may be sold to mendacha for a lesser price, but this is offset since the hunters can give their whole attention to hunting. I have seen a male change hands for £3 but this was very far from a market and the price is generally higher.

The giraffe tail is sold to Dinka and a good tail—which is a long one without white hairs—may bring two pounds. Humr say that Dinka take them to Malakal where it may bring them £5. The sinews are not sold but are used for mending leather sandals.

The leather is put to a variety of uses. When the giraffe is being cut up those who want to make whips cut strips from the hide of the back legs : about six or seven whips can be cut from one giraffe. The leg hides are used mainly for stringing angereybs : this is best done before the hide is dried, the fresh skin with the hair still on it being cut into strips and tied straight away. A big leg is sufficient for one angereyb. Sandals are made from any part of the skin. The belly hide of a female is valued for making the *tugzu*, a crescent-shaped container for liquid butter. A slightly different *baṭṭ* is made from the belly hide of a male. This hide was also used in the past to make shields. They are still made from time to time, and have a present use for retrieving possessions from a burning house. The cost of one portion of giraffe hide whether leg or neck is usually about 10 piastres (two shillings).

The result of a giraffe hunt is a very chancy business. Certainly over a half of the giraffe to which chase is given are not killed, and it happens that horses which are generally thought fit for giraffe hunting do not make kills. The various reasons could be analysed to satisfy European notions of cause and effect : bad ground, bad horse, bad rider. Bad ground may cause the horse to stumble, or slow up, or the rider to lose sight of the game. A bad horse may simply be a slow one or one which fails to close with the giraffe or does not see holes in the ground. One supposes also that there are fast giraffe and slow giraffe. Humr may mention these reasons but to them they are only secondary causes. A man does not mount his horse against giraffe unless it appears to him it is capable of making a kill. His horse is so important to him that it is a stigma upon him if it is said the giraffe beat it ; and for the same reason he chooses a rider whose prowess is tried. Two causes of failure are, however, recognised as primary: failure to give the horse enough grain during the fattening period, and presence of *bugur*. *Bugur* is the worst thing that can happen, for it is impossible to cure by magic and only a prolonged treatment will get rid of it. Other failures can be treated mystically, on the spot.

It is not always clear to Humr whether the primary cause of failure comes from human or divine agency. Ultimately, all fortune or misfortune derives from Allah but the presence of an intermediary human agency may be recognised. The fact that human agency may be present allows the Humr to take precautions or counter-action against it. What comes from Allah directly is not open to the influence of human mechanisms. Any failure receives the comment : *Allah ma antana*, God has not given us ; or *da Allah*, that is God. But those concerned may go on to specify other mystical causes of the failure.

Human agency may cause failure in horses in three main ways : first *hukr*, second *'eyn* or *khashm el 'Arab ;* third, improper behaviour during the expedition.

Hukr, also known as *lawwit*, is of two main types. It may derive from *fughara* (fekkis) or from sorcerers dealing with roots. Sorcerers are few among the Humr themselves, but there are Fellata who have migrated from West Africa whom Humr are said to consult for certain nefarious purposes. The fekkis are of course teachers of Koranic learning and while they exist for the sake of the good, it is said that all of them know ways in which to cause harm, by writing Koranic texts and wrapping roots of sorcery in them.

Hukr, it is said, is resorted to when a man wishes the horse of a certain owner to fail to kill giraffe. He may wish so on account of any kind of dislike or jealousy. Jealousy of rank is a commonly given reason, but anyone with whom a man is on bad terms may bewitch the horse in this way, or a number of men may bewitch it at once. The man is said to go to a fekki or a sorcerer and pay him to cause the horse to fail. Sorcerers manipulate roots in some way. Fekkis may write a Koranic text on a wooden board, wash off the ink into a bowl and give it to a donkey to drink ; then when the horse concerned hears the donkey bray it is bewitched. There are many variations of this operation.

Although the man aimed at is the owner of the horse (for it is the owner and not the rider who gets the kudos of a kill), *hukr* may harm the owner through harming the rider. It has no effect on the owner unless he happens to be the rider as well. A horse or horse-cum-rider which is the object of *hukr* is known, for *hukr* has definite ways of affecting the outcome. *Hukr* makes the horse stumble and fall on ground where it should not do so. One root used in this kind of sorcery, called *durr*, is said to be particularly effective. Koranic texts have a different effect. The horse runs excellently until almost within striking distance of the giraffe, then puts its ears back and slows up. When the giraffe has drawn way, it again gallops excellently. Another kind brings it up to the giraffe and then turns it away, and no amount of urging can drive it in until the giraffe is out of reach. If these effects are not observed, then it is certain that the trouble is not *hukr*.

Hukr is generally directed against horse and rider conjointly for the duration of one expedition. But there is one form of it which, instead of being aimed at the owner of the horse, is aimed at a man who has established himself as a good *ṭarrad* and prevents him making a kill whatever horse he rides.

As for the " eye " or " mouth " of Arabs, some claim this has no effect on the performance of horses, but it is widely held to be a common cause of failure. People see a fine horse and talk about it in extravagant terms of praise. This alone is sufficient to make the horse fail. Some men are said to have mouths which are specially bitter (*murr*). The eye or the mouth affects horses just as it affects fine cows (whose milk dries up) or fine children (who become ill or die).

Humr take action and precautions against these mystical causes of failure. A horse intended for giraffe is seldom taken to a market town where it is open to the gaze of many strangers. (Humr horses are said to have declined in numbers and quality since the days of their famous roans—*el kheyl el khudur*—by means of the eyes of foreigners who see them at the annual Humr horse show.) In the context of a single expedition, it is said to be close kinsmen or political rivals who are the cause of failure. Often from the inception of the expedition a horse owner employs a fekki to counteract various mystical agencies with Koranic charms. A certain text (*sudaf*) is tied to a horse's brow to cause the rider to find giraffe. The *teshil* is a *loweh* (ink-written text washed off a board) which the horse is given to drink. Before an expedition a horse may be given a course of texts—daily drinks to remove possible *hukr* or *'eyn*. If a fekki accompanies the expedition, his work is regarded as so important that he is

given a special share, possibly a whole leg—of any giraffe killed by a horse he has treated. If it is obvious that the animal is bewitched, he can try a number of texts in order to remove the sorcery. These texts are drunk half by the horse and half by the rider. The remains of the drink are rubbed over the horse's mane, back and tail.

Success is held also largely to depend on the behaviour of expedition members. This is a notion which has a very practical value in the first place. A giraffe expedition is a small number of people living in close quarters, perhaps three or four days from any other Arabs, for anything up to a month or more. It is a business-like affair, with much work to be done and there is no time for frivolity. From another angle, it is held that since the reason for the expedition is the seeking of *rizg*, and *rizg* comes from God, members should comport themselves with piety. The members of the expedition are generally not married couples and there should be no sleeping together of men and women. In the cattle camps there are frequent extra-marital affairs and these are not specially deprecated unless discovered by a close kinsman of the woman concerned. But anyone will admit that in fact it is not pleasing to God. Morality on a giraffe hunt should be stepped up. Even married couples do not sleep together on an expedition unless the wife has built a proper tent. Women sleep together in groups on the quarters they share, and a husband sleeps on the flank of them on an angereyb near his wife. If a man is known to be sleeping with one of the women there is bitter talk among the hunters but they do not mention their grudge to him. They are content to know who the culprit is. *Rizg*, which in Humr usage can be translated as " good fortune in seeking wealth", is in the hands of God and they are content to leave it there.

Connected with the great uncertainty attending the results of an expedition is the elaborate divination which is carried out before and during it. Two varieties of this type of sand divination (*khaṭṭ*) have been described already[1] and answers from the divination are here interpreted in terms applicable to giraffe hunting. This form of divination requires no specialist to work it, and is carried out usually by the owners or riders, often in the sand under the horse's nose. It arouses great interest, people cluster around to see the results and offer their own various interpretations. It may end up in violent argument. What is predicted is success in terms of the horses in the expedition, the weather, the amount of meat and so on. It is treated seriously, and a series of unfavourable answers gives rise to worried discussion, at least for some minutes. But a divination is always referred to the future, and its results are not compared with the actual outcome of events. But I was always of the view that the divination was interesting for its own sake, for the fine logic argued in the interpretation of the signs, than in the actual results of the interpretation.

Some friends with whom I discussed Humr giraffe hunting were perturbed that the main motive behind it was wealth and not sport. There is no doubt that money-making is one of the more important motives. If the giraffe were a useless animal they would not hunt it. As it is, Humr never have much ready money and this they find a satisfactory way of adding to their resources without selling their cattle. An expedition may be undertaken with a definite economic objective in view. They hunt giraffe for money to pay taxes, mainly. But they also hunt in order to be able to add to their herds. They could do the same by hiring out their labour in various places, and they could make money in less dangerous ways. Giraffe hunters prefer to do it this way. They also hunt giraffe with no particular money-making objective. They love the meat and the circumstances of the hunt, and the life of the dankuch.

[1] El Tunisy, *Voyage au Darfour*, p. 363 ; and R. Davies, "A System of Sand Divination", in *S.N.R.*, III, 1920.

Khatt: Divining the prospects of a hunt before leaving the cattle camp

The hunter horses lead the way to the *dankuch*

In the talh: applying the coup de grace

In the *sahaly:* hunter with his kill

PLATE 9

Successful hunter with giraffe's tail hanging from saddle

Umm gharagha skin the giraffe

Bulls laden with giraffe meat and skin

Dankuch with drying meat

PLATE 10

The matter has to be seen from the points of view of the horse owner and the rider. If a rich or prominent man is owner, he does not send his horse as a money-making concern. He does so for the prestige through the horse's success and through his ability to dispose of large amounts of meat. He is always ready to attract followers by his generosity. He may perhaps not accompany the expedition itself. He finds some other rider and leaves it to him. Less wealthy people may also own horses good enough for giraffe : I pointed out how the capital required is small, particularly if the man cultivates enough grain to be able to feed his horse throughout the year, or if he can buy it cheaply from a Dinka. Such an owner may ride himself, or appoint a brother or some rider friend for the duration of the expedition in order that this person will have the right to a large share of the meat. If in these days a man wishes to hunt without a licence, he appoints a different range of people : his first task, unless he manages it in absolute secrecy, is to involve all his possible enemies in the expedition so that they cannot talk.

The owner becomes famous, gets a " name " through the fame of his horse. Giraffe hunting is the apex of a horse's career, and a horse is enhanced in value, and is thought good, only if it has killed giraffe. In the days of unlicensed giraffe, ten kills a year seems to have been a good average for one horse. The highest number of which I heard was seventeen giraffe in one year by a horse owned by a Dinka and ridden by Arabs. It is far better to have killed a giraffe than to have led the field at the annual horse show.

Giraffe hunting is the favourite subject of camp-fire conversation. Initially I was puzzled because only the horse and never the rider was mentioned. I never knew who was on the expeditions recounted gallop by gallop. It was clear the rider took only a small place in the prestige here, the bandying about of names over a fire. The glory was all the horse's and its owner's. When a man hears his horse praised it is as satisfying to him as hearing himself praised—a thing which seldom happens in Humr society. It is all the more satisfying when women overhear the conversation.

Horses have a peculiar fascination to Humr women. They are relentless mockers of inefficiency in horse keeping or judgment. When a horse neighs, the Humrawi shouts the name of his girl friend or wife, who is often described as being the " owner " of the horse. A prominent man's fine-looking mount failed to kill on its first expedition. A young divorced woman shouted to the men at their tree (this itself was an unusual liberty) : " So-and-so, poor man, it's as if he had spent pounds on a beautiful woman, then married her, then found she didn't bear him children !" On the other hand it is said that a man whose horse kills giraffe has a tremendous number of female relatives. Swift horses and giraffes are the finest things with which Humr compare their women in song.

For the owner, the reasons for sending his horse to giraffe are the honour and name that derive from success. It is also a way for him to make money which is at the same time satisfactory to Humr notions of manliness. Nowadays if poaching is discovered, the owner is gaoled for six months and his horse confiscated, and the rider given a lighter sentence ; and prison has come to be called *beit er rujal*—the house of real men. "To spend the rains at El Fula" (where the gaol is) carries its own kind of prestige.

The rider too, hunts for economic among other reasons. He gets a whole giraffe hind leg for every giraffe he kills, in addition to his share of giraffe killed by other members on the expedition. He also may choose to hunt when he needs money and refuse at other times. The more skilful he is in judging horses to ride and in the whole of his craft, the better it pays him.

For I think it can be fairly called a craft. I have tried to make out that this is an occupation which requires skill, knowledge and daring if it is to be done successfully. It takes much practice to be done well. All the hunters whom I know who have achieved the name of *ṭarrad numera wahed*—number one hunter—are men of forty or over. Although men chase giraffe from their youth, it takes many years to gain proficiency. Nevertheless it still remains a comparatively anonymous craft, and even those ranked by Humr as number one hunters do not achieve the fame of a successful horse owner.

There is something about the circumstances of the hunt which produces a remarkable harmony among hunters. There is no complaint at ill-luck, and no becoming bloated over high success. There is common interest in the craft, and usually a detailed knowledge of all its parts, including the land on which it takes place. Conversation is carried on in a jargon common to all hunters (ground is never simply flat, it is *misl idak di*—like the palm of your hand). They keep to their code effortlessly : while in one respect the chase is like an obstacle race with a giraffe at the end, yet in another respect the riders work as a team. If a horse falls and bolts, another hunter will retrieve it for him although he thereby loses a giraffe, and chase is not given unless all are agreed. If trouble occurs in a camp it arises from circumstances other than the hunt itself, such as the division of the meat which concerns owner and *umm gharagha*. Mendacha are said to be the most difficult people, and it is often arranged beforehand that they swear on the Koran before setting out that they will buy giraffe killed at a certain price.

But interest in giraffe is not confined to owners and riders. It is everyone's interest. District officials are questioned at every stopping place closely about giraffe licenses. A kind of giraffe mania pervades Humr life. The chance sight of a giraffe causes an interest and reaction that no other animal does. People frequently dream of giraffe. Objects made of giraffe parts, which might have been made of some other material, are open to a special kind of admiration. Giraffe meat is more eagerly sought after than meat of any other kind. The intense interest today may of course be partly the result of the regulations against hunting, for giraffe hunting is restricted by international agreement.

I have already mentioned the drink *umm nyolokh* of giraffe liver and marrow, which many regard as the supreme moment of the expedition. It is said that a person, once he has drunk umm nyolokh, will return to giraffe again and again. Humr, being Mahdists, are strict abstainers and a Humrawi is never drunk (*sakran*) on liquor or beer. But he uses this word to describe the effects which umm nyolokh has upon him. (It is also used for a man's condition after drinking large quantities of sour milk, which results in a break-down of inhibitions.) I can only assume that there is no intoxicating substance in the drink and that the effect it produces is simply a matter of convention, although it may be brought about subconsciously. Its warmth, its delicious taste and consistency produce an effect of physical contentment on Humr, and probably would do to whoever drank it. It is followed frequently by dreams of giraffe, and I have heard a man wake shortly after drinking it shouting "giraffe on your left". This was regarded as a typical effect. In the waking state, also, men swear they see giraffe through the forest or over the plain where there are none at all. In the absence of any physiological explanation these phenomena may perhaps be regarded as an indication of the extent to which the Humrawi's being is permeated with thoughts of giraffe.

NOTES ON THE BONGO

by

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Bibliography

For the sake of clarity, and to avoid undue repetition, a bibliography is given at the very beginning : it consists of only a few works.

1. Evans-Pritchard, E. E., "The Bongo" in *S.N.R.*, XII, 1 (1929), pp. 1–62. This will be quoted by simply giving the page or pages. In the first part of this article the pages given between brackets after the titles of chapters refer to this article ; the titles themselves and their numbers are the same as those in the article.

2. Schweinfurth, Dr. Georg, "In the Heart of Africa". Quotations refer to the English translation.

3. Tucker, A. N., "The Eastern Sudanic Languages", Vol. I. Quotations are from the Introduction, pp. 1–56, dealing with the history of the Eastern Sudanic Tribes.

THE "WAU" BONGO

I. Introductory Note (pp. 1–2)

Prof. E. E. Evans-Pritchard has done a great service to people interested in the Sudan by publishing his article on the Bongo, in which he ably combined the abundant information available from Schweinfurth with his personal notes, made during a nine days' stay at Tonj. His article will be the more appreciated now that copies of Schweinfurth's book are becoming rare and therefore not available to a fairly numerous class of readers.

These notes of mine are meant to fill two gaps in our knowledge of this tribe.

II. Name (pp. 2–3)

The Bongo of Wau area call the Azande "Bajaga", although they know well that their kinsmen at Tonj call them "Mundu". They call all Luo-speaking people "Beer" ; and to distinguish between the Jur (properly called "Jo-Luo") and the Belanda-Bor, they style the former "Beer-gusi" (i.e. the Beer of the East) and the latter "Beer-landa" (i.e. the Beer of the mountain) : a nomenclature which has long since become common all over the country, in the slightly altered form of "Belanda". The Ndogo-speaking section of the Belanda, the Bviri, are called by them Mbe-Gomba, as in Zande, from the name of their best-known section in the south : Mbe-Gomba or Mbe-Gumba. Evans-Pritchard's remark about the Bongo name of Turr or Turru for the Nubians—as given by Schweinfurth—needs an explanation, for the writer does not seem to have grasped its etymology and consequent meaning. This term is common to most western Bahr el Ghazal tribes, though varying slightly in pronunciation according to language. The Jur, for instance, regularly say "uthuro" (plur. thuren), though such pronunciations as "trum" (sing.) and "turuk" (plur.) are occasionally heard ; whereas the Ndogo group say "Turu", or, in its shortened form, "Tuu". All stand for *Turuk*, i.e. Turk(s), a name derived from their Egyptian rulers, who still represented the Turkish Government. This term has ever since been extended to all Whites ; indeed, in some quarters it has been restricted to the Europeans,

other denominations being used for Egyptians and Nubians, namely Wad-er-Rif and Bahara respectively.

III. HABITAT AND BOUNDARIES (pp. 3–4)

I have adopted the artificial denomination of "Wau" Bongo, to distinguish these people from their "Tonj" kinsmen, illustrated in Evans-Pritchard's article; but whereas the latter—though made up of several tribal units—form a fairly uniform group, who dwelt for long years in the same land, the former have been joined together only recently (1930) by Government order, along the Wau-Tambura Road (11 to 36 km. south of the town). Leaving historical details for a further chapter, we may divide these Bongos into four main groups, differing from one another in some linguistic peculiarities, but mostly in historical traditions and extent of foreign influence from the various neighbouring tribes. For the sake of convenience, they will be given the names of the rivers along whose banks or tributaries they had settled of old.

(1) The "Bussere Bongo" are the only ones who still dwell in their original home. As a matter of fact, they should be subdivided into two sub-groups: (*a*) the "Donyaka Bongo" who, though living on both sides of the Bussere river, have their main settlement near the well-known hill of Donyaka, 29 km. south of Wau, famous for its bamboo groves. (Donyaka is commonly called Danyaka, by assimilation of vowel-sound: it is a proper name from *do* meaning "head" and *nyaka*, meaning "field"). (*b*) The Bongo living formerly near the old Wau zeriba (on the left bank of the Bussere) and still living in the neighbourhood of it.

(2) The "Kpango Bongo", who lived near that river.

(3) The "Gete Bongo", who used to inhabit the land watered by the Gete and its tributaries, especially along the upper course of the Ngilia. (*Gete* represents the pronunciation of local tribes: maps and books may have Getti or Getty, as in Schweinfurth).

(4) The "Sue Bongo", who formerly lived far away between the upper course of the Jur (known as the Sue) and the Tonj, but who in more recent times have settled first on the right bank, then (by government order) on the left bank of the Jur river, near Raffili Mission, some 20 km. north of the Bo river. Now, starting from Wau town, one finds first the Kpango section, then the Gete, then the Bussere and finally the Sue section.

IV. SIZE OF THE BONGO POPULATION (pp. 4–5)

The Wau Bongo are decreasing at an appalling rate. It is the sad fate of all such minor units, a fate that was hastened (unwittingly, of course) by moves from place to place by government orders: moves that entail a great deal of moral strain and a still greater one of material hardships, mainly shortage of food for a year and more. A striking instance is offered by the Sue section, formerly a prosperous little colony in the midst of the Belanda-Bor, famous for their agricultural achievements: it is well remembered that they alone would regularly meet all, or most of, the yearly requirements of food-stuff for the pupils of Raffili Station. Now they are a little more than a handful of people, fighting hard for survival.

After the regrouping of all these four sections in one place, official poll-tax lists gave a total of 283 men (*c.* 1932). The last one (1953) has fallen to 211, thus representing a total of some 800 souls.

V. LANGUAGE

Since Evans-Pritchard's article, studies on local languages have made considerable progress. I had already compiled an elementary Outline Grammar of Bongo, when I happened to visit Ringi-Hill (1932), some 40 km. west of Raga, a newly-founded Mission that was eventually closed and then transplanted to Raga, west of the river. During my short stay there I had the opportunity of spending half an hour among the nearby Yulu ; and that was enough to pick up a clue of relationship existing between their language and Bongo : a discovery confirmed by my later studies, which resulted in the discovery of Binga, almost identical with Yulu, and of Kara, similar to Kresh and Aja, but "at some distance". More will be said about these tribes later. Here suffice it to quote Tucker's classification of Eastern Sudanic Languages into four groups (p. vi) : (1) Moru-Madi, (2) Bongo-Baka-Bagirmi, (3) Ndogo-Sere, (4) Zande, etc.

Of Bongo, Yulu (with Binga), Kara, Aja, Kresh (and related dialects), as well as of the Ndogo group (five languages), I have compiled simple Outline Grammars and small comparative vocabularies which are awaiting publication. The Bongo group is rather distantly related to Moru-Madi, showing closer affinity with the Ndogo group, but exhibiting a considerable amount of characteristics of its own : that can only be judged, however, by a comparative study of the languages in question.

VI. PHYSICAL CHARACTERISTICS (pp. 6–8). VII. MUTILATIONS AND DRESS (pp. 8–11)

There is very little to add to the information already available. The Bongo are not so black as their Nilotic neighbours, e.g. the Jur-Luo, but not so light in colour, on the other hand, as the Azande. The four Wau groups differ a little in colour among themselves, too : among the Bussere section, but still more among the Sue one, many individuals resemble the Azande in colour, whereas the others are nearer to the Ndogo (Kpango section) and Bviri (Gete section) respectively. The Bongo, though shorter then the average Jur, are taller than the neighbouring Belanda and Ndogo. The queer-looking ornaments, mostly used by women in the past, have now become almost obsolete, as also among the Dogodjo tribe (Evans-Pritchard, p. 10).

VIII. HISTORY AND SOCIAL ORGANISATION (pp. 11–19)

1. *The Tonj Bongo.* The name "Jur Ghattàs", by which the town of Tonj is still called by many people, is a relic of Ghattàs' "empire" in Bongoland : an empire that did no honour to his quality of Christian merchant, though in comparison with others he looked fairly honest and mild. Tonj itself, or "Tony" rather, is said (at least by the Wau Bongo) to be a name of their own, viz. the name of a great chief of old.

2. *The Bussere Bongo.* The *old* Wau, of Schweinfurth's and Gessi's accounts, lay in their territory on the left bank of the Bussere, not far from the junction of this river with the Jur ; and the no less conspicuous *zeriba* of Kutcuk (alias Koutchouk, Kurshuk) 'Ali, further south-east, near the Jur river, controlled both part of the local Bongo population and of the neighbouring Jur.

As a frame of reference for Bussere Bongo history, the family line is given of an old informant, belonging to the paramount clan of the section, the Nai.

1705 'Boko
|
1735 Kirimolobi
|
1765 Yakanai
|
1795 Ngbyo
|
1825 Gu'dai
|
1855 Molohi
|
1873 'Bolo

(The dates represent the approximate time of the men's birth, by means of which their historical moves will be better understood.)

Molohi is remembered as an outstanding chief in the time of the "Bahara". At his death he was succeeded by a certain Moi, his son-in-law, of the Dongbandu clan, possibly because his sons were too young for the task. In fact, 'Bolo, one of them, was only about 11 years old when the Mahdist amir Karamallah conquered the country. The Bongo fled before the Dervishes, directing their steps towards Tambura, via Namutina river, but a number of them were either killed or taken prisoners. Among others, Molohi's child himself, 'Bolo, was captured and later on transported to Omdurman, from where he returned with the "Hakuma". Nduma son of Deketi, probably the oldest member of the tribe in 1956 (he was born *c.* 1874), tells that five of his father's wives and one of his sons (Nduma's brother) were taken prisoners.

When the Bongo returned from Tambura they resettled in their old homes near the Bussere, and Donji, a Nai, was at the head of his people. By this time, however, they lived in close intercourse with the Jur, who, much stronger in number, assumed a patronising air towards them, exacting—in a polite manner—some kind of "contribution", which the Bongo dislike to call "tribute". After Donji, we see once again a Dongbandu take his place, Donyaka, who was succeeded in his turn by his son Sabun, the present chief of all the reunited Bongo of Wau area.

3. *The Kpango Bongo.* Longo and Damuri zeribas have been carefully described by Schweinfurth (II, 339–346), the former "ranking as a first-class establishment, for it contained a larger number of huts than even Ghattas' zeriba". From the indications left by Schweinfurth, and confirmed by Bongo elders, Longo was situated near the present Kayango Mission, but very likely on the opposite side of the Akule (called by Schweinfurth Okuloh, after the Jur pronunciation), and close by the home and burial-place of the late Chief Kayango. Damuri lay on the eastern bank of the Kpango, but some way downstream of the present Wau-Deim Zubeir road. Both the names, Longo and Damuri (originally Domuri) are clan names. In local tradition, however, a process of inversion of names has happened ; for Damuri has stuck for good, in the language of the elders, to Kayango area, formerly Bongoland, whereas the name Longo has been reserved, in some quarters, to the zeriba on the Kpango. The most reliable among my informants, however, when asked about the Longo clan, are unanimous in affirming that they lived around the present Kayango Mission, where there lie scattered numbers of their graves. These people remember with pride that their fathers fought under Gessi's flag, together with the Dembo, being all subjects of the same great master, Genawi Bey. The very name Genawi is still fairly common among them, being imposed on their children, as that of Gessi among Ndogo children.

Herewith Dangalango-Brinji's pedigree : all these people live on the Kpango : they know of no other home of their ancestors.

1680 Lufi
|
1705 Giró
|
1735 Gúú
|
1765 Njùù
|
1790 Rúkotú
|
1820 Ngunya
|
1855 Ndinya
|
1875 Dangalango

(Clan : Ngira. Home on Khor Dama, north-east of Kayango, a small tributary of the Kpango. Other local clans : Longó, Domurí, Mangá, Kporù, Mórù.)

At the time of the establishment of the Condominium, and soon after, we find these Bongos settled on the old Wau–Chakchak track, between Kayango Mission and the Kpango river, on the right bank of which maps of the time mark the home of their headman, Sheikh Musa Genawi. Later on, when the need of a better road was badly felt (after the revolt of the Dinka leader Ariandit, 1922), the old track was abandoned ; and, whereas the Jur and kindred tribes were ordered to move on to the new Wau–Aweil road, the Bongo and the Azande (the latter lived on the opposite bank of the river) were shifted on to the Wau–Deim Zubeir road, the latter west of the Kpango and the former east of it. Sheikh Musa was succeeded by Kurjok (note his Jur name), and Kurjok by Faraj, whose son Mere led the scanty remnants of the colony to the new home allotted to them by the government at the time of the general redistribution of tribes in the west-central district (1930–31). The new home was 10–20 km. south of Wau town, on the road to Tambura.

4. *The Gete Bongo.* Of this section I have discovered the descendants of only two clans, which probably belonged to two different sub-tribes.

(1) The Ngurfara (or Ngurfala) clan. What Schweinfurth writes about the Ngurfara (I, 238) applies to this people, but their home was at the zeriba spoken of in II, 403. My informants, however, say that Ngurfara was originally a tribal name, and was applied to the zeriba only by "extension", as was the case with Longo, etc. : the real name of the place was Ngilia, a name derived from that of the nearby stream, as is customary with these peoples. To give an idea of its location, old Yinga would say it was a day's walk from Bisellia The most famous chief still in remembrance among them is Ngol (such is the local pronunciation of Ngoli, a proper noun frequently met in Bongo) ; near Ngilia there is a rocky hill still called after him "landa ba Ngol", i.e. "hill of Ngol".

Yinga
|
Sòké
|
Sòké
|
Yinga

(Yinga's pedigree ; clan Ngurfara. Yinga was born *c.* 1863 ; saw Gessi, Lupton, etc., when a youth ; was a little older than chief Mboro (Kpogede), but younger than chief Kayango.)

(2) The Wura clan, belonging to the Dogojo sub-tribe (commonly spelt Dogodjo). The best known of their chiefs was Dokungu (alias Dakungu), who ruled them for

many years, and whose name appears in detailed maps a short way south-west of Wau town : he died before 1930.

The Gete Bongo, during Karamallah's invasion, sought refuge in the depths of their forests, and later on when Tambura's hordes started to harass both the Bongo and their "guests" (Golo, Ndogo, Bai, etc., who had recently escaped from Zemoi's invasions in Deim Zubeir area), they fled to the nearby Dinka, settling under their protection at Khor Grinti, a little way north of Wau town. There they remained until the coming of the French ; but, being unable to return to their old residence far away in the "bush", they fixed their home north of the Bussere, where they soon had as neighbours the Bviri and the Sere, both streaming down from Zande country as soon as they were set free from the yoke of Tambura. The general resettlement of tribes that took place in 1930 caused them to change their homes by no more than a few miles ; no more than an ordinary shifting of cultivations, and consequently of dwellings, as it is customary with them every fourth or fifth year.

5. *The Sue Bongo.* This section formed a congeries of sub-tribes ill-united among themselves, each one being sub-divided into a number of clans. Names of clans are often the same as those met with in other sections (as also happens, e.g. among the Kresh) : Longo, 'Bu'bu, Nyere, Kpukpu, Mböri. Each clan had their own hill and their own "water" (a stream, from which they got water to drink), west of the Iba and east of the Sue (upper Jur). The paramount clan, the Kpukpu, lived on Hibi Hill, near the stream of the same name. Here is the family line of the last Kpukpu headman, Dorobo : Dorobo s/o Heta s/o Ko'do s/o Yebi s/o Gbàà s/o Róm s/o Kaja s/o Ngundé s/o Mu'di s/o Dosi s/o Ngbanga-Kila, eleven generations in all, going back approximately (if my informants are to be relied upon) to 1650.

The pedigree of Ngoyo (the present head of the section) counts eight generations in all : Ngoyo s/o Runga-Bongo s/o Dai s/o Däl s/o Komalese s/o Góndo s/o Mini-Le'ji. The only historical information of any interest about this group was supplied by the same Ngoyo. During the time of the "Bahara", Ngoko was the paramount chief of the area, being himself a Kpukpu, and having under his command several petty chiefs, among whom was Gbèdi Ngulo, a member of Ngoyo's own clan, the Nyere. Owing to ill-treatment by the "Bahara", he fled with a number of followers to Yambio's, where a colony of their descendants is still to be found. (I think that these people can be identified with those spoken of by Evans-Pritchard, at p. 4 : "a small localised settlement of Bongo in the extreme north of Yambio district under a Bongo chief named Toin".) We may assign this event to about 1875. Later on, the greater part of the population fell under the northern Vungura, mainly Tambura. Ngoyo himself (born *c.* 1875) spent his youth partly with Ndoruma and partly with Tambura. From the former he had the gift of a wife, as a reward for his services ; but Zande commoners afterwards stole her from him, and he heard no more of her. Of Tambura's time, he remembers the far-off raids, as a member of one of the chief 's armies, up to Tonj and even Rumbek, and beyond both towns, to capture Dinka girls and cattle. On one occasion, together with some 'Bel and Moro (kindred tribesmen), they arrived at a place called in Bongo Kobotongbodo, which—according to their ancestors' tradition—was the oldest home of the Bongo in remembrance. If this tradition has any value, it may indicate the place where the Bongo, in their early migration from the south-west, made their last long stop before taking the fina step that was to divide them from their tribal kinsmen ('Bel, Gberi, Sofi, etc.) andl lead them to their respective new homes.

Clans (pp. 17–18)

Evans-Pritchard expresses the opinion, opposed to Schweinfurth's, that the Bongo are divided into a number of tribes : in my notes, these are generally styled "sub-tribes".

A clearly defined system of clans exists among the Bongo, and the clans are, as in neighbouring tribes, exogamous. Evans-Pritchard wonders why, within the same tribe, some clans observe the rules of exogamy and some do not. I venture to suggest a solution which appears simple and at the same time based on good grounds, i.e. the practice of the Wau Bongo. Several so-called clans are merely sub-clans, formed of old when the Bongo were very numerous : owing to their fast growth, they split up into minor units that gradually came to consider themselves as so many clans apart, not infrequently forgetting—or rather, allowing to fall into disuse—the general name covering the whole clan, which was replaced little by little by the names of the sub-clans. Intermarriage among them became uncommon, and often obsolete ; but in course of time, when the Bongo grew fewer and fewer, this rule was no longer kept, and intermarriage was resumed. This happened, for instance, at Donyaka. The Dongbandu, the Ayer and the Bubu formed a single clan, the Nai ; but at present, if asked for the name of their clans, they will give you only the name of their sub-clan, i.e. Dongbandu or Ayer or Bubu as the case may be. Formerly, they did not intermarry, but now they do.

Clan names. (1) Bussere Bongo : Nai (subdivided into : Dongbandu, Ayer, Bubu) and Mitu. (2) Kpango Bongo : Dogojo, Longo, Domwor, Domanga, Kere, Doci. Damuri (more correctly Domuri) is a sub-tribe comprising possibly all the above-mentioned clans, with the exception of the Dogojo. (3) Gete Bongo : Ngurfura and Wura. The latter belong to the Dogojo sub-tribe, distinct from—though homonymous with—that of the Kpango people. (4) Sue Bongo : Kpukpu, Nyere, Bitaga, Bubu, Mbilaya, Kuruku, Nyekolayo, Ngolomodo, Muku, Mbelembe, Gutu.

Totemism (pp. 18–19)

Evans-Pritchard regrets that he found out too late that the Bongo had totems, and thus had no time to pursue his inquiries on the matter. As far as the four sections of the Wau Bongo are concerned, my lengthy experience among them, coupled with direct and indirect inquiries on the same subject, have led me to the conclusion that no totemism exists among them. This fact suggests some doubt about Evans-Pritchard's last-moment findings : may not totemism among the Tonj Bongo be an imported tenet and consequent practice ? For how else could it be explained that a very large portion of the tribe, made up of several sections differing in origin, traditions and environments, should ignore a principle so fundamental to native tribes that do really possess it ? Local exceptions to the general rule, instead of invalidating it, appear to strengthen it. In fact, the few Bongo whom I found to hold totemistic beliefs openly acknowledged that this was a peculiar tenet of their particular families, and not a tribal one. I know, e.g., of a Bongo man called Kombo (born *c.* 1898), of the Bussere section but related through intermarriage with the Tonj people, whose family has the turtle-dove ("gumriya" in Arabic) as a totem. This bird is believed to come at the birth of every child of the family, with a twig in its bill. A similar belief is met with among the neighbouring Golo, from whom Kombo's family may have borrowed it. Families of the Longo clan (Kpango Bongo) respect the baboon as their totem, confessing, however, that they have borrowed it from their neighbours, the Ndogo ; possibly through intermarriage.

The example of the turtle-dove is typical of the Golo-Ndogo totemistic system, intimately connected with child-birth. I have therefore the impression that an indirect proof of the foreign origin of Bongo totemism may also be found in the fact that they have similarly borrowed other practices concerning child-birth. Among the Sue Bongo, for instance, it is customary to give new-born babies a honey-comb to lick : a custom of evident Belanda origin. The Kpukpu clan, of the same section, do not "eat" lulu-oil (shea-butter), considering it as their quasi-totem (not as a simple taboo) : a typical quasi-totemistic belief and practice of the neighbouring Belands, especially of the Bviri tribe. The Kpango Bongo, in "beating" a name upon new-born babies, place a bow in the tiny hands of males and a broom in those of females : exactly the same practice exists among their Ndogo neighbours.

IX. CHIEFS AND RAIN-MAKERS

It is not surprising to find that the Bongo lack a well-defined system of chiefship and consequently have no long-established chiefs' pedigrees ; for they have had very little cohesion and social organisation from the very beginning of their known history. This is, after all, what can be gathered both from Evans-Pritchard and the old authors he has perused : and it is quite in accordance with my own findings among the Wau Bongo. There are, it is true, some ancient chiefs who are still remembered in tribal circles ; but they are few in number, and their fame is probably due to particular circumstances ; generally speaking, success in war. As tribal warfare has disappeared, their importance has faded away : in a few cases, no more than their names have been kept in tribal memories, but these names have now little significance even for their descendants.

In connection with rain-making, the gap separating these Bongo from their Tonj kinsmen is wider than in any other field. Three sections know nothing at all about rain-stones. The Sue Bongo alone know of them by hearsay, but no rain-stones exist among them, nor do they remember of their having ever existed. Moreover, even within this tribal section, no real identity of belief and practice can be found, for they themselves, as we have said, are made up of several clan-groups, occasionally differing in several points. For instance, old Ngoyo, the present headman of the whole section, was telling me in 1943 that, in old times, in their original home, they had some rain-makers of value, but they are now all dead, and have left no heirs with rain-making powers. They were called "be Luma mini" (=*lit.* owner of the God of water) : they used to boil their "medicine" in a pot, from which water was then sprinkled up into the air with bast cord, while they invoked the rain. Later on, when the Sue Bongo settled near Raffili, as the former specialists were all dead, the village elders tried to imitate them, by going to the nearest stream and sprinkling water up into the air, as the rain-makers did, by means of the same bast cord (called "gbadangi" in Zande). But if their efforts failed to produce the desired effect, and a severe drought threatened to spoil the crops, they usually decided to have recourse to the owners of the rain-stones in Tonj : not too far from Raffili, by the direct path through the forest.

In recent times, the Wau Bongo—together with the tribes living along the Bo–Wau–Deim Zubeir road (with the possible exception of the Shatt)—have fallen under the influence of the cult of Makau : a typical instance of religious "inter-tribal movement" which deserves, I think, a fuller explanation.[1] It was started on the occasion of the severe famine that struck the Bahr el Ghazal in the years 1931–32, by a Belanda (presumably) Bor woman south of the Bo river : from there it rapidly

[1] For ampler information, see my article "Il Gruppo Ndogo del Bahr-el-Ghazal" in *Annali Lateranensi*, Vol. II, 1938, pp. 351-52, and pp. 297-98.

proceeded northward until, via Raffili–Kpayele, it soon reached the Bongo country and spread as rapidly among the neighbouring Bviri, always through the ministry of priestesses belonging to the Belanda tribe. Since then it has never died out. The Ndogo-Golo-Sere-Bai do not seem to have taken to it very seriously; anyhow, if they did so at the beginning, led by the urge of novelty, their enthusiasm soon cooled off and among them the Makau movement can be looked upon as a thing of the past. However, among the Bongo and the Bviri, up to Deim Zubeir, the cult still continues (1955).

But—one will ask—who is this Makau (or Makawa, as some pronounce it)? Makawa is a Kresh demi-god, a kind of intermediary spirit between the high Deity and mankind, especially in connection with agriculture and, consequently, with the problem of foodstuffs. Makau, on the other hand, is a Ndogo spirit, a kind of wood-goblin, of very secondary importance. The new cult is doubtlessly addressed to the Kresh Makawa, though his name may have reached the ears of the Belanda priestesses via Ndogo, thus causing the commonly accepted pronunciation of Makau.

Going back to the Bongo, I happened to be at Donyaka on 23rd August, 1943, while a ceremony was being performed in order to obtain the badly needed rain for the whole area. Neither rain-stones nor any of the old-fashioned Bongo devices was resorted to, but Makau's priestess was officiating in the usual Bviri-Ndogo way. People assembled in the shade of a huge mahogany tree, bringing with them such kinds of "small" food as were available at that time: pumpkins, lady's finger pods, and some (very little) sesame: half to be feasted upon in the communal meal, and half as a gift to Makau (i.e. to his minister). A few ears of durrah dried in the sun were thrown by the priestess' husband into the river (Bussere), while she threw seeds of durrah, sesame, nuts and the like into the air and invoked Makau. The meeting broke up with a shrill cry uttered most vigorously from all the participants. Chief Sabun did not attend, however. When I asked him why he stayed away, he told me frankly that he would attend on the occasion of thanksgiving to Makau, after harvest, when beer is available: "dry" meetings, though in honour of the great Makau, have no appeal for him.

X. BIRTH (p. 29)

A few customs are recorded here, but, as a rule, they do not apply to all the four sections. Here is what the Bussere Bongo say. In old times, at child-birth it was customary to fix into the ground, by the door-sides, two posts of a special tree (*gere*, in Bongo) as a warning to the people not to enter the hut, for a newly-born baby was there. Then—they add—you cut two sticks of *hedo* (*Anageissus leiocarpus*: Arabic *sabaya*), to drill a fire with in a corner of the room: that fire was not to be taken outside until the baby, too, was brought out. The baby was taken out of the room four to five days (three to four among the Sue section) after birth, to be given a name, provided the umbilical cord had already duly "fallen". They are not aware of any particular reason being attached to the number of days: contrary to Ndogo custom, where three days are fixed for girls and four for boys (the same as for funerals) owing to traditional tenets. The name is chosen by the family elders: normally, the first-born child is called after the last elder deceased in the clan, the second after that of the last dead in the mother's clan: and so on.

Concerning a woman's confession of her sexual guilts at child-birth (as practised by a number of neighbouring tribes: Ndogo-Golo, Jur, etc.) and inquiries as to a child's legitimacy, there is no agreement among the various sections. Among the Bussere people, only if a man has special reason to suspect his wife's fidelity on finding

her pregnant, will he ask her about the child's father, invoking misfortune and vengeance from high, if she lies. She will confess her guilt, if not immediately, then during the labour of child-birth ; and then the appeased husband will bless her, by sprinkling water mixed with saliva upon her, thus ensuring a safe delivery. The Sue people, according to the unanimous witness of the elders, never bothered unduly about their wives' possible infidelity. If you happen to know—they say—that a child was the fruit of adultery, you (naturally enough) grew angry and protested that it should be abandoned in the bush. But on hearing the news, the elders would gather, consider the case and summon you : this cannot be done—their advice ran—for the child is "your bride-price fruit" and therefore is yours. And their advice was law. The elders, then, would deal with the adulterer : he would be warned to make the confession of his sin to an old man enjoying his confidence, and to hand him a proper fine (20–30 hoes) as a reparation.

After child-birth, the Gete Bongo used to test a child's legitimacy by offering it shea-butter or sesame to lick. "Sesame licking" is widely spread among most Bongo sections (as well as among neighbouring tribes), but for other reasons. The Sue Bongo used to give it the baby to lick ten days after the birth, in order to teach the baby to suck properly. Other sections still give the mother a mixture of sesame and flour, to facilitate an abundant supply of milk.

MARRIAGE (pp. 29–33)

Among most of the Wau Bongo it was customary to become engaged to a girl in the following way. (Previous accords of a private nature between the future couple frequently paved the way, but were officially ignored.) One day you betook yourself to the beloved girl's home, sat down somewhere and there spent the whole day : seemingly for no particular purpose. Next day you did the same ; and, of course, if your first visit had by chance passed unobserved (at times numerous visitors call at a family, stop a while, e.g. to drink a cup of water, and go), this second one could not. The third day you went accompanied by a relative of yours, and you were asked the reason for your errand : had you perhaps a mind to marry one of their girls ? On your affirmative answer, they invited you to send an official representative to handle the usual negotiations.

The bride-price was very much the same in all sections. Among the Bussere Bongo, it consisted of 50 hoes, 10 spears, 300 arrows ; among the Gete people, 50 hoes, 10 big spears, besides 40 small ones as gifts to close relatives, with the addition of 100 arrows for the bride's younger brothers.

Wedding ceremonies cannot be expected to have been uniform all over Bongoland. According to my informants, in Donyaka circles things took the following course, though freedom was left in minor details. The bridegroom, having collected either the full dowry or the part agreed upon for down payment, made preparations for the wedding banquet : porridge, meat or fish, and, above all, plenty of beer. On the appointed day, the bride was escorted by relatives and friends to the prospective husband's home, where the banquet took place. The dowry was duly counted, hoes, spears, arrows being laid down on the ground, one by one, before the in-laws. Then the hoes (the essential part of the dowry) were placed on the bride's head, and a baby (taken from any of the bystanders) was put into her left arm, while the bride-groom, knocking a pole out of the ground (one of those sustaining the temporary awnings erected for the occasion), put it on her head, pressing the hoes down with it. At the same time both his people and he himself pointed out to her the direction of her parents' home. And home she now returned, in the middle of the night, accom-

panied by the bridegroom's female relatives, who brought with them gifts of food and drink. At home, her father and elder brothers tied the ritual cord of *Grewia mollis* round her neck, and her mother blessed her by ritually spitting upon her. Then she retraced her way to her husband's home, to remain with him for good. In some regions, she spent three nights with her husband before going home to bid her relatives farewell and be duly blessed.

The Sue section, as usual, differ considerably from the practice of their kinsmen. To ask for a girl's hand, an elder relative was sent at the outset with the symbolical gift of a pair of hoes. The prospective bride's father (or guardian) assembled the family council (his elder male relatives and her mother) to ask for advice : if the hoes were taken in, it meant consent. Whereupon the messenger hastened back home to bring the good tidings, and forthwith preparations were started for the wedding. When a sufficient quantity of food and drink was ready, the family moved with it to the bride's home for the customary banquet. People ate and drank all the night long, until, at dawn, the girl's father showed the prospective son-in-law into the hut prepared for him, and bade his daughter to follow him there. When he came out, he was expected to declare his satisfaction at having found her a virgin. The bridegroom and all his relatives then returned home, where a greater feast was prepared for the actual wedding, of which feast the bride's people partook in full, with the exception of the father, who was presented with abundant beer to drink alone at home. While people were banqueting, the bride herself kept indoors, alone, thus leaving the two parties more free to discuss—at suitable intervals during the big meal—the important question of the dowry, about which only preliminary arrangements had been previously entertained : a first instalment—usually some 20–30 assorted pieces (hoes and spears)—was supposed to be handed over before the in-laws departed. The rest (thirty more pieces) would come in due course.

A particular circumstance will be noted—on which some of my informants carefully insisted—viz. that the girl's consent was not needed, indeed not even asked for, at her betrothal. Headman Ngoyo, in the pleasant naïve way of an old-fashioned tribesman, plainly asserted that the very suggestion of a girl's consent being necessary for the purpose would have appeared ludicrous in the good old times : should a girl refuse her consent, they knew only too well how to bend her will (by means of a good thrashing, or, if that proved ineffectual, by means of real torture). Nor should one think that Ngoyo is the solitary witness of such a system.

What has been said about bride-price and the like represents the traditional law ; exceptions, however, were not lacking ; a fact, after all, not confined to any tribe or place or time or subject. Moreover, special circumstances suggested, on occasions, peculiar solutions of such problems. To end with a concrete example, here is an account on Ngoyo's wives which throws additional light on various aspects of native life in the past century.

No. 1 : Nyàgú, of the Mùkú clan, from Tonj. She proved barren. Dowry paid : twenty hoes, thirty spears. No. 2 : Mabula, a Mittu. She bore eight children, six of whom died early. Of the two surviving girls, one was married in Tonj area ; and one, mistaken for a wild beast, was accidentally killed by night in the bush. Mabula's own story is too typical to be passed by in silence. A Mittu family, driven away from home by war, had emigrated to Deim Zubeir. On their way back homewards, they met Runga, Ngoyo's father, who lent them his boat first to cross the Sue and then to fish in the river—for they were literally starving. Noticing the abundant supplies in the friendly Runga's granary, the Mittu family asked for an amount of

foodstuff in exchange for one of their daughters. Runga emptied several ordinary-sized basketfuls of sesame to fill a huge basket of theirs, getting Mabula in exchange, whom he married to his son Ngoyo. No. 3 : Yaya. A Bongo man wanted to marry a daughter of Ngoyo, but, being too poor to pay for her, he gave him one of his sisters in exchange : Yaya. She bore Ngoyo five children, four of whom were still alive in 1941. Incidentally one realises that, though by no means common (as, e.g., among such western tribes as the Ndogo, Kresh, Mangaya, etc.), marriage by exchange was not unknown among the Bongo : necessity, as hinted above, suggests exceptions to rules both in this and other points. No. 4 : Inakpire. Chief Ndoruma (as already recorded) presented Ngoyo with this Zande wife, as a reward for his services in raiding, as a member of his eastern army, the Tonj-Rumbek-Mvolo area. But his Zande colleagues carried her away one day, nor did he hear any more about her. She has left behind a son, Hibi.

The status of widows may be suitably dealt with here. If all elders agree in saying that no freedom was left to women in the choice of their first husband, they likewise agree in admitting some, if not full, freedom, when it was the case of a second one, i.e. after the death of their "real husband". Though men in possession of many wives occasionally used to dispose of them before death, in order to avoid contentions, their will was not law. If a widow disliked the man allotted to her by the family council, it was thought unfair to force her to join him. Even after having joined the husband chosen for her by others, if she did not feel happy with him, she was allowed to leave him for another of her own choice from among the deceased husband's relatives.

Contentions may arise in these days from new circumstances due to changes of the modern world, of which we give a sample. At the death of a certain K. (Kpukpu clan, Sue section), the widow chose to marry F. 'B ; but, on his becoming a Christian he wished to leave her (she was an elderly woman, from whom no more children could be expected), in order to marry a wife of his own choice. She refused to quit him, but he did not yield, so that the family council had perforce to meet to settle the case. After long discussions, at last a suitable husband was found for her : Y., the clan leader, who willingly agreed. But the woman refused to marry him, on the ground that once upon a time she had sinned with Y., and K. had known it : were she to marry Y., K. would certainly "hit her with *sini*" (the black magic of the dead, for which see below) ; she therefore asked that G., an adopted member of the clan, should marry her. The elders, awed by her remark about *sini*, were all perplexed, except for Y., who, intimately interested in the proceedings, objected that she had made friends in the past with G., too, and that therefore the reason she brought was false. I left with the question still *sub judice* (1943).

Normally, wives were disposed of after their husband's death. But in the case of youngish women whose husbands grew too old, it was an accepted practice in some Bongo communities to distribute them, as a rule, among their brothers' sons, their only obligation to their real husbands being to provide them with food.

DIVORCE

All agree in saying that a woman could not divorce her husband, but that a man, under certain circumstances, could divorce his wife. If she ran away, refusing to return to her husband, Chief Sabun and his old father assured me that the Bongo of old (i.e. before the days of the "Hakuma", and whenever they could afterwards) had recourse to the same severe methods as those hinted above in connection with girls who refused to marry the husbands chosen for them by their parents. A particularly

efficient method—they would say—was to tie her in a hole made in a big ant-hill ; the white ants with their bites would bring her back to her wits (*sic!*).

Divorce was not common, either, on a husband's part : almost the only reason commonly accepted was the habit—not occasional incidents—of theft, especially from their neighbours' fields, this being a continual source of troubles at home and of law-suits at court.

Barrenness was no reason for dismissing a wife, nor was it customary with the Bongo (as with the Zande, Ndogo and others) to exact another girl from her family, in the hope that she might bear her husband a child instead of her sister or cousin. If such a girl was available, it was fashionable to offer her as a second wife, but the normal bride-price had to be paid for her, too. It is said that barren women proved very often a success (in polygamous households, of course, where other women bore children) : they were more active than the average wife, cultivated bigger fields, and often prided themselves in "marrying" another wife to their husbands with the fruits of their labours, in order that she might give him the desired offspring of which they were themselves deprived. This custom, shared in common with neighbouring tribes, is perhaps more widely practised among the better-known Nilotics, a branch of whom, the Jur (properly : Jo-Luo), live close by the Bongo. These subordinate wives fall necessarily under a double yoke, that of the purchasing woman and that of the husband, both of whom call them "their wife" : the latter, however, is probably lighter than the former.

ADULTERY

If a girl was deflorated by her prospective husband, a fine of 10 hoes was thought enough : the same applied also to any man who had intercourse with a virgin, without any previous hint of betrothal, but eventually married her. The custom still held good in the years 1940–46, while I lived in Bongoland. An instance. J. D. had had intercourse with a certain H's daughter who, though officially married to an old man, persistently refused to join her husband. At last, realising that violence was of no avail (and even dangerous, if the facts were brought to the knowledge of the competent authority), they let her have her own way and marry D., only a fine of one pound (equal to 10 hoes of old) being imposed upon him apart from the customary bride-price. The fine was paid to the girl's father, not to her husband : a compromise between the old and new conception of property in women.

Real adultery was—as is well known—a most serious matter in old times : the offender, if caught by the woman's husband while still "hot" with anger, might be killed outright. If the guilt was discovered later, normally through the woman's own confession, a compensation of thirty hoes was requested. If the man was unable to pay, relatives used to collect the much needed "irons", to avoid an otherwise unavoidable fight. But if the accused man denied the guilt, a regular court was held, at which representatives of both parties were summoned, to witness the ordeal of poison drinking. If the man, however, proved his innocence by duly vomiting the ritual potion, the same fine asked from him was to be paid to him by the plaintiffs, as a compensation. The name by which the poison is known, *'beji*, might suggest a relationship with the corresponding Zande word and custom, *bengi* ; but, apart from a considerable difference in actual pronunciation (greater than it appears from the spelling), the ordeal in question is widely used also among non-Zande tribes, such as the Ndogo and the Jur. Moreover it should be remembered that these Bongo were under Zande influence for barely one generation, viz. from Karamallah's invasion

(1884) to the coming of the French (1897), or, at the latest, to the establishment of the Condominium (1901–4).

The Sue section, so often at variance with the others, agree on the whole in these points : even fines for adultery were more or less the same (20–30 iron-pieces).

BURIAL (pp. 33–40)

A gourd is placed on the mouth and on the eyes of the dead person. Normally, the burial takes place in the evening. People dance, singing and crying at intervals, to the beating of a drum placed in the middle of the courtyard, while women perform the accompaniment by shaking their musical gourds, standing near the door. Formerly the corpse was tied in a crouching position ; but, as with neighbouring tribes, this custom has died out. The shaft has a side niche, on the east for a woman, and on the west for a man : for—as the commonest interpretation runs—the river, where women go to fetch water, lies (generally speaking) east, and the forest, where men go hunting, lies in the west.

The days of the funeral do not seem to be the same everywhere. In the Donyaka area, it was customary to spend two days at the grave side ; then people were dismissed for two days, to be summoned again for two more days. In the Wau area, no piles of stones are erected on the graves : this is said here to be a Belanda-Bor custom. For notables, big heaps of hard soil (normally from ant-hills) are piled up, supported by a wooden palisade. Carved posts are still in fashion, but wood-carvers are deplorably lacking in this part of Bongoland, and the custom is likely to die out, both owing to changing conditions and outlook and for want of skilled craftsmen. In all my tours among these Bongo, I could discover only two graves with carved posts deserving attention. In one of them, the image of the dead headman had been carved twice, on top of two different posts. Concerning the much discussed question of posts having horizontal notches carved on them, I shall state what I heard from the Bussere Bongo in regard to the two above-mentioned graves. The posts with human images on top, have no notches on them ; but a post standing apart, with nothing but carved notches on it, is erected by the side of the other, or in the middle of the two posts with human images. When asking the natives for the meaning of the post itself and its notches, the only answer I got was that the post represents the deceased man's wife—no special meaning being attached to the notches. Although I put the same question to several people of different ages and in different surroundings, I always got the same answer. This was up to 1934, when I left Bongo country for the first time. But during my second stay in Bongoland, having made friends with many elders—and having grown myself into an elder, in their eyes—I found them less reticent on the subject. The notches, they explained, marked the number of enemies killed in war, and—to be frank—also outside war. The Sue section, in this as well as in other details, show more affinity with their Tonj kinsmen : north of Raffili, in their former home, one can still see their graves made of heaps of stone, as at Tonj, and in the past one could see also numbers of carved posts on them. The latter, however, have been almost totally destroyed by rain and fire, as it happened with those in and around the Kayango area, long since abandoned by the former inhabitants, the Kpango Bongo.

XI. MAGIC AND RELIGION (pp. 40–48)

The bulk of these notes were first gathered in the years 1931–34, further additions having been made in the years 1940–46. Inquiries were carried on personally, through the medium of local Arabic or, more often, of Zande ; but on special occasions, above all when dealing with religious ideas and practices, I sought the additional help of

interpreters (Bongo, of course), whose work I could check, if not fully understand, as I had some knowledge of their language. In spite of all care taken, however, foreign ideas are bound to creep in through the medium of some unavoidable foreign words, causing obscurity in some points and partial overlapping with foreign ideas and customs in others. Both these sources of error are enhanced by the fact that these Bongo, much more than the Tonj people, have undergone considerable influence from neighbouring tribes : as always happens when small units live side-by-side for a long time with bigger ones, especially if severed from the bulk of their own race. All these reasons should be taken into account when criticising the records left by writers on this subject : all of which, besides being sadly incomplete, exhibit a good deal of uncertainty and confusion. My findings in the Wau area are not much better than theirs, I am afraid : they are offered, in spite of their shortcomings, as a contribution to a better knowledge of the tribe at large, and in particular of these, its least-known sections. For the sake of clarity, I have divided the subject under numbered headings.

(1) Out of the many words employed to signify supernatural beings, it cannot be denied that "Luma" is the best fitted to express the idea of a "Supreme Spirit", i.e. God : though it is occasionally used in connection with "luck" and the like.

(2) Besides Luma, one hears the "bi-togbo" or "bi-to'bo" often mentioned by the Bongo (Schweinfurth spells it "bitaboh"). Some Bongo say it corresponds to the Zande "ira-mangu", but further descriptions do not agree with this interpretation. In fact, only very old people are said to be "bi-togbo", and are supposed to walk around in the depth of night, looking for the victims to injure or kill. Should they approach anybody by day, they would cause darkness to surround themselves, so as to enable them to work their black magic unseen. They are believed, moreover, to climb up trees as nimbly as monkeys, and from there to fall upon the unfortunate traveller they are aiming at, and kill him instantly. This last detail, gathered from several elders of the Bussere section, may explain why Schweinfurth could describe the "bitaboh" more or less as a wood-goblin or ghost.

(3) The "morijo" (Evans-Pritchard spells the word "moriju") seem to deserve, more correctly than the above, to be called wood-goblins, or spirits haunting the forest or some particular place.

Other spirits will be mentioned in connection with magic. The following does not pretend to be a real discussion on magic, but rather a brief description of what is the usual process of thought and consequent practice of our Bongo in connection with the origin of common evils, above all of disease : the great problem that literally haunts the life of these people.

If you (or any of your dear ones) fall sick, you are naturally led to inquire about the cause of it. The first thing to do is to consult the "bi-mala" : he is like the "binza" of the Zande (or even their "benge"-operator), the "mbe baaci" or the "mbe pfa co" of the Ndogo-Golo. Responses take, as a rule, the following course.

(*a*) First cause—The "atoro" (Zande), i.e. the spirits of the dead. The "bi-mala" will consult his traditional pot (see Evans-Pritchard at pp. 40–41) ; and, on getting an affirmative answer, will prepare his "medicine", sprinkle the sick person with it, and all will be well. The "atoro", as far as they may be concerned with the matter, have been duly appeased. But a question arises : what do the Bongo call the "atoro" ? Explanations gathered from the natives do not unfortunately agree. On occasions I heard the term "luma gubu" for it, a word which Evans-Pritchard thinks to apply to

"spirits" in general (p. 46). An exact term for it is doubtless "bicin" (*alias :* "bishin, bisin"), though its very fluctuating pronunciation betrays its foreign origin. It is, in fact, the Belanda's "black magic of the dead", called *sin* in Bor and *sini* in Bviri : the same, after all, as the *cyen* or *cien* of the Luo race (Jur, Shilluk, Acoli, etc.). The Bongo, following the nature of their own language, have added the prefix "bi", which corresponds to the Zande "ira" (and "ba") and to the Ndogo "mbe".

(*b*) Second cause—The "bi-kaga", i.e. "the owner of medicine or poison", who is working his evil spell on you. "Bi-kaga" is the "ira ngua" of the Azande and the "mbe ye" of the Ndogo. He is supposed to be endowed with a supernatural power, varying, however, from individual to individual ; he can often cast his spell from a considerable distance. To make more certain, however, of the efficacy of his charms, he will go to your hut while you are absent, and there lay his spell, like an unavoidable snare. Very little can be done against the "bi-kaga" : the "bi-mala" himself is frequently at a loss as to which remedy to suggest. Experts who boast of a particular power in this respect are not much relied upon. We notice in this field, as well as in others, a rather common feature : minor tribes have great confidence in major ones, and the Bongo have recourse to the Zande as the Jur to the Dinka. Bongo men of this area are therefore seen, now and then, to set off for Zande country in search of remedies for otherwise incurable diseases.

(*c*) Third cause—The "bi-makadu", i.e. the "ira mangu" of the Azande. The response on the matter is given by the professional "bi-mala". If his Bongo pot (or, occasionally, his Zande "iwa") does not answer the questions put to it in regard to the "atoro" or the "bi-kaga", there remains no other solution than to ascribe the fact to the "bi-makadu". The traditional pot is then solemnly consulted a second time: the head of a digdig or gazelle is fetched for the purpose. A slice of meat is cut from its mouth, and put into boiling water : if it promptly sinks to the bottom, the "bi-makadu" is the real cause of the evil ; if not, the reason must be sought elsewhere. In the first case, the "bi-mala" must then proceed with the discovery of the man, by means of the customary pot or such alien devices as the Zande "iwa".

Once the "bi-makadu" was discovered (I must change over to the past tense now), he was summoned officially and told about the whole affair ; and if he denied his guilt, put to the poison test. According to the Sue Bongo, the poison used on this occasion was *gero*, the same as that employed to poison their arrows, the difference lying only in the quantity administered for the purpose.

The schematic account I have endeavoured to draw up does not claim—as already hinted above—either completeness or absolute accuracy in the general outline and its details. The subject is too complex and mysterious, and my knowledge of Bongo language and custom (though not negligible) is far from sufficient for the purpose. On the other hand, the ever-recurring fact of "inconsistency" in native belief and practice applies here more fittingly than anywhere else. And how could a clear-cut line of thought and conduct be expected in such a field, when it is lacking among the most civilised people who do not agree on a well-defined creed ?

During my first tour of duty in Bongoland, I was in close touch only with the sections nearer to Wau, whereas in my second stay I made friends also with the Sue colony. Their leader, Ngoyo, the best authority of his group both for age and knowledge, supplied me with details differing considerably from those gathered from the other sections, but confirmed—as I could witness—by local practice. He would describe, e.g. the "bi-kaga" working at his pot, stirring up into it sesame mixed with his powerful medicine, calling out in the meantime the name of his intended victim :

his spell will work from any distance. He himself—Ngoyo added sadly—had been badly "hit" by a "bi-kaga" after his first sitting at Bisellia court : and he showed me the traces of a terrible disease still clearly apparent in his legs. On the second occasion—Ngoyo proceeded—he was hit all over his arms so badly that he nearly died. It must have been Luma's benevolent will—the old headman added gratefully—that the wicked "bi-kaga" should not prevail over him, otherwise he would not have been able to supply me with the desired information on the customs of his tribe.

In connection with the "bi-to'bo" (such is their pronunciation of the word), the Sue people observe that, however dreaded, he was the only man capable of discovering the even more dreaded "bi-makadu", for the latter is wont to dance for some nights on the grave of the person he has killed, but unseen ; and only a "bi-to'bo", if available, has the power of seeing him. His witness, therefore, could not be gainsaid—commented Ngoyo—and the "bi-makadu" was accordingly disposed of with an arrow directed to his heart !

From such hints, one can understand on what grounds both magic, and countermeasures against it, were based in old times, and, still worse, on what grounds justice was meted out accordingly.

XII. A NOTE ON BONGO ART

As markets in the Sudan are full of Bongo curios, a word may be said about Bongo art. That the Bongo are possessed of an artistic taste above the average, is a fact—I feel—that cannot be called in doubt. Suffice it to examine carefully not only their own huts, but even buildings erected (in past times) "by order", e.g. public Rest Houses, where no personal comfort or pecuniary advantage was expected. Ornamentation skilfully contrived by such simple means as wicker-work of bamboo-canes, animal pictures neatly drawn in white against a strikingly black background, etc., tell enough of their abilities in this field. Wood-carvers, however, have disappeared from the Wau area, and therefore I am not in a position to give any judgement on their products. The two grave-posts spoken of above are poor works indeed, and, as far as I can remember, were made by strangers : either from another tribe or from another section.

Wood-carvers at present are all from the Tonj branch, where a government-run workshop was set up, which gave (and still gives, I suppose) work to a number of skilled labourers and spreads the fame of Bongo art far and wide. I sympathise with the ideal aimed at, viz. to secure a reasonably high standard in the already current production, by excluding from sale unworthy pieces, and sympathise even more heartily with the practical (i.e. economic) side of the enterprise, which provides a number of clever natives with a well-earned livelihood ; but, to put it bluntly, the market for Bongo art has proved its grave. The mass-produced curios have become fatally standardised, like any commercial product, by losing the naïve charm they probably possessed at the beginning. If it is true that they still attract the interest of the average collector—thus still being an economic proposition—it is also true that they fail to impress the artist. A comparison with earlier Bongo products will serve to illustrate my thought. After painstaking researches in the Bussere area, I succeeded in finding and purchasing two old pieces of local handicraft, two "manjinji" (called "manyinyee" by Schweinfurth : see Evans-Pritchard, p. 59) : huge wooden trumpets with carved human heads on top, looking rather like "idols" or fetishes. Formerly they were never missing in tribal Bongo dances, but are now fast going out of fashion. These were placed in our African Museum at Verona, by the side of a show-case

containing a number of the common Bongo curios. The museum curator told me that the average visitors are readily interested in the latter, admiring the wide-mouthed hippos, the long-tusked elephants, etc., viewing the "manjinji" with curiosity only because they are naturally led to think them to be African fetishes. But one day two artists entered the museum, and he watched them carefully to see what their reaction would be. Whereas they scarcely deigned to give the Tonj articles a passing look, they stopped "a very very long time" in front of the two "manjinji", observing them from all sides and looking at them over and over, until they had fully appreciated them. I must confess that I share fully in their favourable comments : this is—however primitive—real art ; the other (of the Tonj curios) is a good quality standardised product : no more than that.

This final note on the artistic abilities of the Bongo reminds us of the other good qualities of this tribe, a grand people in old times : about 100,000 when visited by Schweinfurth (1870–72), who reckoned them to be then only about half of their original number ! It is with a lump in the throat that one envisages the inevitable passing away of this, and other fine races, from the face of this beloved country, the Bahr el Ghazal.

NYIMANG CIRCUMCISION[1]

by

ANDREAS KRONENBERG

The meaning of circumcision to this tribe[2] is the initiation to manhood and its physical fulfilment, marriage. So it plays a most important role in the age-grade system,[3] and is deeply rooted in religious[4] concepts (ancestral spirits, fertility).

Circumcision is performed annually during the four-year period of the fourth grade of the age-grade system. The age for the circumcised, *kwai.kanyer* (men.new), can vary between twenty and twenty-seven years and this wide range is due to the rule that brothers[5] must belong to different age-grade classes. Circumcision is usually performed one year before marriage.[6] The customs that people circumcised together should never wrestle together, that they must help each other, and greet each other by embracing the knees, and that they use, after circumcision, new names, are expressions of a special social relation or identity among them.

Circumcision is performed in September and October some time after the ceremony of bean-leaf eating, so stressing its fertility significance. At this time, those who are to be circumcised parade in special ornaments—bells, beads, strips of sheep-skin (*tulang*) and girls' armlets,[7] which indicate that they are as yet like women[8]; they have not obtained the status of men.

The ritual central figure of the circumcision is a local priest, whose ancestral spirit (*kuni*) is in charge of it. For example the *kuni*-priest, Unisi, is the priest in charge of circumcision in the village of Arang. The *kuni*-spirit, through his priest, fixes the date of the circumcision.[9]

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[1] The aim of the present article is mainly to publish some songs which are essential at the circumcision ceremonies of the Nyimang. As these songs would remain meaningless without a general description of the circumcision itself, a short sketch is given here. For further details see R. C. Stevenson, "The Nyamang of Kordofan", *S.N.R.*, XXIII, 1940, pp. 75–98, and S. F. Nadel, *The Nuba, Anthropological Study of the Hill Tribes in Kordofan*, O.U.P., 1947.

[2] The Nyimang, as the *Ama* are called by their neighbours, are a Nuba tribe of about 37,000 individuals inhabiting the Nyimang Hills.

[3] Every age-set lasts four years, the transition is marked by a common rite. Roughly speaking boys under 12 years belong to the first set, from 12 to 16 years to the second, from 16 to 20 years to the third and from 20 to 24 years to the fourth set. Every set gets its individual name, e.g., in 1957 the boys belonging to the fourth set were called *baru.gufang* (push.fall) which means, that these boys are not full men and that they fall if they are pushed; so *baru. gufang* has exactly the meaning of the German "Halbstarke". Now in 1959 the new fourth age-set has another name.

[4] A. Kronenberg, "Some notes on the Religion of the Nyimang", *Kush*, VII, 1959.

[5] With the exception of twins, who, being socially identical, belong to the same age-grade class and so are circumcised together.

[6] Because the circumcision is the physical prerequisite of marriage (Nadel, *op. cit.*, p. 413) many young men who work abroad, and plan to marry at once on their return, have themselves circumcised in hospitals. But after their return home they must perform all the circumcision-ceremonies, even a fictive cutting of the prepuce and the following seclusion.

[7] *Koli* = armlet, worn by the *kwai.kanyer* on the right arm. It is worn also by girls on both arms, some time before the perforation of ears, e.g. shortly before marriage.

[8] It is worthwhile to note that the groom is dressed like a woman during the marriage ceremony.

[9] The date of the circumcision is in so far delimited, that it must be after the "ceremony of bean-leaf eating" and that the boys in Shirrowa, the place of the rainmaker (*shirra* or *shila*), must be circumcised first.

Every hill has a certain order, in which the boys belonging to different clans must be circumcised. For example, in Salara, a boy of the *Togi* clan must be circumcised first.

The last day before circumcision he who is to be circumcised is shaved by his "servant" (*bider*)[1] and must shave his *bider dia* too (see Plate 11). In the evening he and his family go to the compound of his future mother-in-law. In the courtyard the circumcised-to-be and his future mother-in-law dance four dances together. The rhythm of this dance is beaten by his age-mates on a plank of her bed (*kubang*) on which the circumcised will sleep during the subsequent seclusion in a cave and which will serve as the bridal bed.[2]

The following are the texts of the songs which accompany the four dances :[3]

1. The *Baya* (clan of the circumcised-to-be) are like the flowing *Khor* Kungang (the biggest *khor* in this area). The Kungang is flowing, where does the *Baya* flow ?
2. Young girls take care of their bodies and they go into the bush to bring millet. The *dumal-dumal*[4] women go for millet and the old women carry hump-backed the millet. (The meaning of this song is that food is so important and big a thing, that nobody, young or old, is greater than it.)
3. He (the circumcised-to-be) ate old *simsim*, he ate old melon and he has become fat like a *simsim* silo. (To be able to withstand circumcision, the circumcised-to-be must be in good physical condition : they do not work ; they should eat as much as possible to become well-fed.)
4. When the *kwai.kanyer* are fat, they behave like he-goats ; they cry "eeee" and they sleep outside in the cultivations in the dew. (I.e., because the *kwai.kanyer* become fat, they do not suffer from the cold.) They are free like goats and they can do everything they want.[5] They are like the bird *dushe*.[6]

Merissa is distributed afterwards and people start general dancing. The *kwai.-kanyer* with his friends enters the *kere.shere*, the bride's room. She and her mother remain in the cooking place (*tusso*) ; the latter distributes *merissa* again. Now there is a general mocking between the women married to men of the groom's clan and the women married to men of the bride's clan.[7] The woman who wants to sing gets up and points with a stick to the person she wants to mock. The others remain quiet while she sings. This singing continues all night.

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[1] Every candidate has four "servants", *bider*, whom he can choose freely among his friends.
1. *bider dia*, the "big servant", a grown-up but not yet circumcised boy :
2. *kwolengu.worgel* (flies-expeller), a small boy of about 4 years of age :
3. two girls or young women.

The *bider dia* stays in the cave during the seclusion of the *kwai.kanyer* and assists him. The girls bring the food to the circumcised.

[2] If a boy is not engaged his mother supplies him with a plank from her bed.

[3] The tapes, which were recorded on 19th November, 1958, in the village of Arang (Salara), are deposited in the Phonogrammarchiv der Österreichischen Akadamie der Wissenschaften, No. 2312.

[4] During eight months after the birth of a child, the mother wears a wild cat's tail on her back. As these tails wave around when they move, these women are called onomatopoeically *dumal-dumal* women.

[5] The *kwai.kanyer* can go anywhere they want without the father's permission, they are not obliged to work, and it seems that they are allowed to have sexual relations with women.

[6] This kind of bird comes to the Nuba Mountains in the months of August and September to pick up the ripening millet in the cultivations. Therefore these birds are compared with the *kwai-kanyer* who only eat and do not work.

[7] The Nyimang-clans are patrilineal and exogamous.

The following are some mocking songs exchanged between the mother of the twenty-four year old Kurshuman Abia, Clan *Baya*, from Sonyur (Salara), the circumcised-to-be, and the mother of his bride from the *Kenya* (mouse) clan.[1]

Man's mother (*Baya* clan) :

1. The daughter of Kuna (i.e., her son's future mother-in-law) made this house and she believes that she is a good woman, but today the warriors of the *Baya* came to you, and what will you do, mother of the girl ?
2. You are the *Kenya* (mice) and some of you gnaw the *Salal* tree. Today this *Baya* man (her son Kurshuman) came to kill twenty warriors of the *Kenya.*
3. The small birds (family of the bride) are on the other side of the *khor* (i.e., the bride's house), but the *Baya* stay in the *khor* because it is their place (i.e., the *Baya* now occupy the girl's house).
4. The daughter of Kuna arranged this meeting, but the *kuni*-spirit of the *Baya* is big and it speaks very much. (I.e., the *kuni*, the ancestral spirit, of the *Baya* clan is mighty and greater than all the goods which the bride's mother has prepared for the meeting.)

Girl's mother (*Kenya* clan) :

5. We are the women of the *Kenya* clan and we are more beautiful than the sun when it rises. Because it is so, we give light and the people and also the women of the *Baya* can work. If the women of the *Kenya* sleep, the women of the *Baya* must also sleep (because it is dark). If the women of the Kenya are in the *Gum*[2] the women of the Baya must sleep. Take torches to see that the *Kenya* women are very numerous and better than the *Baya* women.
6. The *Kenya* women gnaw the house of the *Baya.* (This is the answer to the reproach that the *Kenya* gnaw the trees like mice.) The daughter of Kuna sits at home. The *Baya* women bark at the *Kenya* women because they have no houses (they have been gnawed by the *Kenya*). Where do the *Baya* women go today ?
7. Look, my son-in-law is like a chicken that puts its head under the feathers of the hen. Why ? You are afraid of me because I am very hot. (I.e. I am the best at mocking.)

Man's mother (*Baya* clan) :

8. The women of the *Inang* (sub-clan of the Baya) and Kurshuman's mother came into the house of the daughter of Kuna and they are like the rain (i.e., they will stay there for some hours and nobody can sleep while they are there). Where did the mother of the girl run away to ?

Girl's mother (*Kenya*) clan) :

9. I am like an elephant and I drink very much water and I am not afraid of you, women of the *Baya*, because I see you (from my high point of vision as an elephant) like dogs.
10. I guard my son-in-law in my heart (i.e., I do not like to hear anything wrong about him). The girl's mother pierces the fence of the man's mother (i.e. she came suddenly into the compound of her son-in-law's mother to frighten her). The

[1] Village of Arang (Salara), 19th October, 1958, Phon. Archiv No. 2314, 2315.

[2] *Gum* is an underground *khor* in the west, along which the sun, in the form of a red bull, walks to the east after sunset.

girl's mother sends people to the man's mother to tell her "I have become an elephant".

Man's mother (*Baya* clan) :

11. I tell you that you are small mice (*Kenya*) and you have no power. Call the *Baya* women to help you.

12. The women of the Baya dug a trap for you, into which you will fall like the elephants. Where can you go to ?

Girl's mother (*Kenya* clan) :

13. I am the daughter of Kuna. Because you dug an elephant's trap for me, I am really the elephant. I know myself.

And so on.

At dawn the *kwai.kanyer* and his "big servant" wash themselves behind the house. He puts on everything he has. The mother-in-law anoints him with *simsim* oil on his front, left and right chest, left and right thigh, and says : *koru.ngal.worani*="make a hen's beak",[1] so wishing and giving him fertility.

The *kwai.kanyer* now goes to the house of his parents. In front of it there are sitting two groups of men, the young and the old ones. The old men, who all belong to the clan of the circumcised-to-be, drink *merissa* and anoint themselves with oil. In the meantime the *kwai.kanyer* gets a good meal ; he takes off all his clothes so that he is completely naked ; he then gets *merissa* to drink and when he starts singing, his father gives him the *difang*, an axe-shaped stick which is carried by the *kwai.kanyer* during the whole time of the circumcision, the seclusion, and the subsequent celebrations. During this period the circumcised is not allowed to sit on the ground but always on the *difang*. He also gets a *wardal*, a stick for cleaning the cultivations. Now the procession to the place of circumcision starts : first goes the circumcised-to-be followed by a very small boy, the "fly expeller". In his left hand he carries the *wardal*, at first horizontal and later on perpendicular, which indicates symbolically that he will now become a man. The "big servant" carries two tobacco-cakes : one for the man performing the circumcision, and the other for the mother-in-law when she visits the circumcised for the first time.

The circumcision itself is performed by bringing down the blade (*kadang*) of an axe (*temedi*) on the outstretched foreskin, on the *difang*. Should the *kwai.kanyer* cry out or show that he is suffering, his first woman, or his first child, would die. Every movement is done three times symbolically before it is really executed.[2]

Now follows the segregation in a cave, where the circumcised of the community stay for about one month. During this time the circumcised sleep on planks from the beds (*kubang*) of their future mothers-in-law and they use headrests (*kiding*) also supplied by them (see Plate 12).

When the segregation is over, the circumcised wrestle against the uncircumcised every evening for a month in the house of some *kuni*-priest. Also a beer-drinking ceremony takes place during which the *kwai.kanyer* are followed by companions carrying millet, thus stressing the fertility aspect of the whole ceremony.

[1] i.e., that her son-in-law's penis should be strong like a hen's beak.

[2] Sometimes only one, sometimes three or more boys are circumcised the same day, the total number of circumcised in a locality hardly exceeds 25 boys.

PLATE 11 The day before circumcision the circumcised-to-be (note his girl's-armlet) shaves his "big-servant".

Plate 12. Seclusion in the cave: The circumcised sleep on planks from the bed (*kubang*) of their future mother-in-law. Their friends entertain them by singing and playing on a lyre (*kunyang*).

DEATH OF A GOVERNOR-GENERAL

by

RICHARD HILL

Ahmad Pasha abū Adhān, governor-general of the Egyptian Sudan, died in Khartoum on 6th October, 1843. Rumours current at the time connected his death with the high politics of the Ottoman Empire and implicated his immediate superior, Muhammad 'Ali Pasha, *vali* of Egypt, as an accessory to his murder.

The Circassian Ahmad Pasha was long known as an efficient officer with a ruthless singleness of aim. He had been dismissed as head of the war department in Cairo because he swept the stables with excessive zeal. In 1838 he was posted to the Sudan as colonel of the 8th (negro) regiment of the line and after a few months was appointed governor-general. In 1840 he conquered the region of Taka, the present Kassala, and then embarrassed Muhammad 'Ali Pasha by writing to the governor of Sawakin, who took his orders from the Hijaz and not from the Sudan, imperiously demanding the right to collect taxes from the coastal people.

Ahmad Pasha reformed the Sudanese finances with savage energy and inflicted heavy punishments on many Christian accountants who had been convicted, or merely suspected, of graft—punishments which must have made him an enemy of the entire Coptic community in Egypt and the Sudan. On the other hand he went out of his way to cultivate the loyalty of his negro troops.

In Alexandria on 9th June, 1843 Muhammad 'Ali laughingly said to the English consul-general: "Oh! I forgot to mention that Achmet Pasha has found a very rich gold mine near Fazughli, and I have written to him to come down [to Alexandria] to make a report to me . . ." Consul-general Barnett thought that the *vālī's* real object in sending for Ahmad Pasha was his removal from the government of Sennar[1] where, Barnett reported, he had assumed an almost independent power marked by cruelty and extortion.[2]

From the curt style of his letters to Ahmad Pasha—he dropped the familiar *oghlum* (my son) of his former correspondence—it is clear that Muhammad 'Ali was angry with his governor-general. Ahmad was ordered to come to Egypt on a visit and the cabinet arranged for a ship to await him at Korosko, a village between the First and Second Cataracts at the northern end of the desert road from Berber and Khartoum. Special urgency was enjoined upon the crew: "If they are late, I will beat them to death with thick clubs!"[3] The governor of Upper Egypt was asked to keep a look-out for his approach.

After some delay, for news could not travel faster than the camel could trot, the Government of Egypt learned that Ahmad Pasha was in Kordofan, and the order "of extreme importance" addressed to him probably demanded his instant return to Cairo.[4] This despatch seems to have crossed a letter from Ahmad dated 23rd June, informing the *vali* that he was on the point of going to harry the Baqqara tribesmen of the province.[5] Ahmad's prevarication was now clear to Muhammad 'Ali who prepared

[1] Sennar was then commonly used as a synonym for the Egyptian-occupied Sudan.

[2] Consul-general Barnett to the Foreign Secretary, 10th June, 1843 (P.R.O., F.O. 142/13).

[3] *Shūrā-yi mu'āvene* to 'Alī Bey. 'Ābidīn Archives, Cairo, letter-book 288, *ma'īyet-i senīye*, Turkish bureau, No. 101, 7th June, 1843.

[4] The same, letter-book 369, *ma'īyet-i-senīye*, Turkish bureau, No. 254, 2nd August, 1843.

[5] *Mu'āvenet-i aqālīm* to the *Katkhudā*. 'Ābidīn Archives, letter-book 209, No. 763, 18th September, 1843.

to meet armed resistance from his subordinate and, as a precaution, ordered all officers and men, and all civilian employees, to take an oath of fidelity to the government, a most unusual proceeding which, the Tuscan consul-general wrote, caused much public speculation in Turkey.[1]

A persistent rumour circulated in Egypt that Ahmad Pasha had refused to obey the summons for his recall and was acting in secret agreement with the Porte. Artīn Bey Sakyās, an Armenian member of the *vali's* secretariat, admitted that frequent complaints of injustice by Ahmad Pasha had been reaching Cairo, and he mentioned a current report, which Artīn apparently believed, that Ahmad had been sending large sums of money to Istanbul.[2]

Then came the news from Khartoum that the governor-general had returned to Khartoum, presumably without campaigning against the Baqqara, and had died in his palace on 6th October. The messenger who brought the news left Khartoum immediately and by driving his camels hard arrived in Cairo on 19th October. So urgent was his message that Muhammad 'Ali at once summoned a general council of leading officers who happened to be in the city on that day. The council decided to abolish the dangerous concentration of power in Khartoum, extinguish the governorate-general and convert the Sudanese provinces[3] into separate administrations depending directly on the Cairo Government.[4]

There are two versions of the story of his end. One is that Ahmad Pasha in the Sudan received a secret proposal from Sultan 'Abd al-Majīd in Istanbul that the Sudan should be detached from Egypt and brought directly under the administration of the Porte. Doubting the authenticity of the sultan's communication, Ahmad Pasha sent it back to Istanbul for confirmation, but on the way the document fell into the hands of the agents of Muhammad 'Ali who summoned Ahmad to Egypt. Ahmad prevaricated until Muhammad 'Ali in exasperation sent an Albanian detachment under the command of one 'Umar Aghā[5] to arrest the double-dealing governor-general. Aware of his probable fate Ahmad, already ill with fever, took poison before 'Umar Aghā reached Khartoum. An elaboration of this story brings in Ahmad's wife, a daughter of Muhammad 'Ali,[6] a cultivated, intriguing woman, who is said to have undermined her husband's relations with her father.

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[1] Consul-general A. Rossetti to the Minister of Foreign Affairs, 3rd December, 1843 (Archivio di Stato, Florence, consolati nazionali, esteri, bundle 2535, 1843). The use of the word Turkey for the Ottoman Empire or even for the Anatolian provinces, was a foreign convention.

[2] Barnett to the Foreign Secretary, 17th October, 1843 (P.R.O., F.O. 142/13).

[3] As Egypt was herself a province (*vilāyet*) of the Empire, the Sudan was merely a dependency of a dependency. I have therefore used the word "provinces" here simply because it is the current translation of the Sudanese *mudīrīya* which was a district governed by a *mudīr* responsible to the *hikimdār* which again I have rendered "governor-general" in deference to current translation. "*Hikimdār*" means rather, a commissioner.

[4] The governorate-general was suppressed also in 1857 and 1871 and each time eventually restored.

[5] Elsewhere recorded by his nickname, Domuz Aghā (Pig Aghā). 'Umar Aghā afterwards served in the expedition to Taka in 1844 with the Albanian formation which, according to Lepsius, had come from Cairo to bring Ahmad back by force (C. R. Lepsius, *Letters from Egypt*, 1853, p. 198).

[6] For want of evidence to the contrary I have accepted the consensus of contemporary European opinion on this lady's parentage. The anonymous author of a manuscript written in French, entitled *Journal . . . au Sennar*, preserved in the Bayerische Staatsbibliothek, Munich, who had several conversations with Ahmad Pasha in the Sudan, wrote that she had been Muhammad 'Ali's slave.

The other version, from the village of Halfaiyat al-Mulūk near Khartoum, was to the effect that Ahmad Pasha was a close friend of the Sudanese chief, Shaikh Idrīs Nāsir of the 'Abdullāb tribe, to whom he proposed that the Sudan should be separated from Egypt and placed under Idrīs as sole ruler, or as joint ruler with himself. With this in view Ahmad Pasha sent to Istanbul this shaikh's hereditary symbol of office, the two-horned headdress which his ancestors had received from the sultans of the old Funj empire of Sennar, together with a copy of the treaty which Idrīs's forebear had signed in Sawakin in 1520 with the general of the Ottoman army sent by Sultan Selīm I to occupy the town. On the way to Istanbul these were intercepted by the Egyptian Government and Ahmad Pasha, fearing the consequences, took poison.[1]

The consuls in Alexandria picked up what scraps of information they could as they knew they would get none from official sources. Writing to his Foreign Minister, the consul-general of France retailed the gossip in Alexandria about the enmity between the *vālī* and his chief officer in the Sudan. He too reached the conclusion that Ahmad Pasha had refused to carry out Muhammad 'Ali's orders. "Whatever my private opinions," the consul-general went on, "I have not enough positive detail to mention in an official despatch." He then added a significant remark: "Ahmad Pasha's death forestalls the many serious difficulties which must necessarily arise from the independent position which his ambition drove him to set up at Khartoum. Had he lived, Egypt might perhaps have been committed to a continuance of those bloody and costly wars with the Ottoman Empire, and the peace which seems to reign between the Porte and the Viceroy would have been seriously compromised."[2]

A more colourful report came from his English colleague. Barnett was convinced that Ahmad Pasha had been murdered by the Albanian officer who had been ordered before leaving Cairo to get rid of the Pasha. On his arrival in Khartoum, Barnett wrote, this officer was entertained by Ahmad, picked a quarrel with him and shot him.[3]

The question now arises, was Ahmad Pasha betrayed by anyone in the Sudan? C. R. Lepsius, the Prussian Egyptologist who was in Khartoum four months after Ahmad's death, was told that the fat *mīr liwā'* Muhammad al-Amīn Pasha, the governor-general's own deputy, was the betrayer,[4] while F. Werne, who accompanied Ahmad Pasha on the Taka campaign in 1840, ascribes Ahmad's betrayal to his misplaced confidence in the Sudanese shaikhs.[5] All this is hearsay.

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[1] Typescript note by J. Longe, district commissioner at Rufa'a, dated 28th March, 1931, and derived from the 'Abdullāb. The assertion, accepted without question by historians of the Sudan, that Sawakin was occupied by Ottoman forces as early as the reign of Sultan Selim I must be rejected in the presence of stronger evidence for its seizure between 1545 and 1561 by Özdemir Pasha, beylerbey of the Yemen.

[2] Consul-general C-F. de Lavalette to the Minister of Foreign Affairs, 30th October, 1843 (Ministère des affaires étrangères, correspondance politique des consuls, Alexandrie et le Caire, XVI, p. 51). In another despatch, dated 17th November, 1843, De Lavalette reported his personal impression that Ahmad had died by foul play.

[3] Barnett to the Foreign Secretary, 15th April, 1844 (P.R.O., F.O. 142/13). The Tuscan consul-general wrote that the messenger (*chāvūsh*) sent to recall the Pasha to Egypt was the same officer who brought back the news of the Pasha's death. (Consul-general A. Rossetti to the Minister of Foreign Affairs, 3rd December, 1843 (Archivio di Stato, Florence, consolati nazionali, esteri, bundle 2535, 1843).)

[4] *Letters from Egypt*, p. 131.

[5] *African Wanderings*, 1852, pp. 261–3.

Whatever the truth concerning Ahmad's death, Muhammad 'Ali discouraged speculation on the subject. The official version was that he perished from malaria on which " black fever " supervened.[1] The Porte was informed as a matter of routine as the dead Pasha was of the senior grade of *beyler beyi*, conferred by the Sultan. When, in the following winter, Ahmad Pasha Manikli was sent to the Sudan to superintend the administrative reorganization, he wrote to the *vālī* that a certain Shaikhi Efendi had been overheard saying that the late governor-general had been plotting evil against the State. The *vālī* replied abruptly: "Shaikhi is a liar; disregard him."[2]

There are thus two distinct issues : the nature of Ahmad Pasha's death, and the truth or falsity of the allegation that Sultan 'Abd al-Majīd intrigued with Ahmad Pasha behind the back of his own governor of Egypt. The first is a domestic issue of concern only to Egypt ; the second touches Imperial policy at its peak.

The statement that Ahmad Pasha was murdered in his residence in Khartoum is not impossible but highly improbable. So dramatic an occurrence in the capital of the Sudan could hardly have been kept secret for long. If servants will not hold their tongues, neither will palace guards. The event would not have escaped the notice of the Sudanese authors of the chronicle *Tārīkh mulūk al-Sūdān*,[3] or of the anonymous Italian chronicler of the times, who never spared his criticisms of Ahmad Pasha.[4] One or the other would almost certainly have mentioned Ahmad's sensational end ; yet both are silent on the manner of his death.

The statement that he took poison is not, of course, impossible, but rests entirely on the dubious evidence of hearsay. It is no less hearsay because it was heard in two widely separated quarters. All the written sources (and there seems to be no oral tradition surviving in Khartoum) assume a normal death. The Pasha's remains lie under a mud brick dome at the western end of 'Abbas avenue in Khartoum and the termites have done their work ; there can be no post-mortem revelations. The manner of his death remains an open question.

Of greater importance and wider implication is the statement that Ahmad Pasha treated with the Ottoman sultan for the cession of the Sudan at a time when the Syrian wars were over and the sultan was believed to be at peace with his troublesome *vālī*. Consul-general Barnett thought it unlikely that the Porte would have chosen that moment to encourage a revolt against Muhammad 'Ali.[5]

It is within the bounds of reasonable possibility that Ahmad Pasha's severity against the Coptic officials in the Sudan may have driven them into a conspiracy to

[1] Muhammad 'Ali to the Katkhudā. 'Ābidīn Archives, letter-book 8, No. 559, 6th November, 1843.

[2] 'Ābidīn Archives, letter-book 369, *ma'īyet-i senīye*, Turkish bureau, No. 3644, 1st January, 1844. Nothing is known of Shaikhi. Paton, recording contemporary rumour, relates that the sudden death of two senior officers in the Sudan, Firhād Bey, colonel of the 8th regiment of the line in succession to Ahmad Pasha, and 'Abbās Agha, ex-governor of Berber, caused Muhammad 'Ali to suspect that Ahmad Pasha intended to seize the Sudan (*A History of the Egyptian Revolution*, II, p. 227). Both Firhād and 'Abbās were said to have been poisoned by their chief clerks at the instigation of Ahmad Pasha (Werne, *op. cit.*, p. 80, and Italian MS., fasc. iv, pp. 13–15).

[3] *Ed.* Mekki Shibeika. Khartoum, 1947.

[4] This work, of which I am preparing an English translation, is in possession of the Royal Geographical Society of London.

[5] Barnett to the Foreign Secretary, 17th October, 1843 (P.R.O., F.O. 142/13).

ruin him by conducting a whispering campaign, for the Coptic community was close-knit and had influential members in Muhammad 'Ali's secretariat and treasury. Otherwise it is difficult to imagine where Artīn Bey got his information that the Pasha had been sending large sums of money to Istanbul, itself a remarkable feat to have kept secret for so long. The silence of the Egyptian state archives on the incident would by no means damn as falsehood the story of the intrigue and the money, for Muhammad 'Ali would have been the last to have put such delicate matters into writing. The supposition that the story was invented by a mischievous gossip is weakened by the wide provenance of the rumours—Egypt and the Sudan—though the version related by the 'Abdullābī Shaikh, Idrīs Nāṣir, may have been a local garnishing of a Cairo rumour.

The explanation of this unsolved mystery of high Ottoman politics may be found in the Imperial archives of the Sublime Porte in Istanbul, if a dossier of the incident is ever brought to light. It will scarcely be found elsewhere.

[Mr. Hill reported later that a search of the Ottoman archives had revealed nothing as at August 1957. ED., *S.N.R.*]

SOME PROBLEMS OF FAMILY LAW IN THE SUDAN REPUBLIC

by
P. S. Atiyah

In all countries problems of family law raise special difficulty because of the complicating international factor. Although this factor may be present in any branch of the law, it is one which arises most frequently, and with the most complicated results, in the law governing family relationships. This is specially true in the modern world where travel is easy and migration common. Besides all this, there is obviously much greater diversity among the different systems of family law in the world, than there is in such matters as, say, commercial law. For example, whether a contract is governed by the law of England, or by the law of some other country is frequently immaterial because the result in both systems of law will often be the same. But in matters of family law, of divorce and nullity, of monogamy and polygamy, of wills and intestacy, the different legal systems of the world display such a fantastic diversity of approach and result that it is likely to be the exception rather than the rule to find two of them adopting common solutions to these problems. All this is enough to cause considerable difficulty in the rules of private international law even in such a country as England where there is only one domestic system of law. Thus we find a writer referring to the "sense of strain" which is felt when the rules of private international law have to adjudicate between rival systems of family law based on different legal philosophies and cultural backgrounds.[1] How much greater is this sense of strain, and how much more complicated is the position where, as in the Sudan, there is more than one domestic system of family law. The object of this article will be to examine a few of the many problems created by the recognition in the Sudan of these diverse systems of family law.

When a case concerning family law arises in the Sudan three problems of necessity arise. First, have the Sudanese courts jurisdiction in the international sense ? Secondly, if they have, is this jurisdiction to be exercised by the Civil or the Sharia Courts ? And thirdly, what law is to be applied by the Court having jurisdiction ? The second and third of these questions are expressly dealt with by the Civil Justice Ordinance (which will for convenience be referred to as the C.J.O.) and the Sudan Mohammedan Law Courts Ordinance. Firstly, section 33 of the C.J.O. confers general jurisdiction on the Civil Courts :

> . . . save as otherwise provided by this or any other ordinance for the time being in force, the High Court shall have jurisdiction throughout the Sudan to hear and determine all suits.

Section 4 (3) makes it clear that for this purpose " 'Court' means a Civil Court except where otherwise expressly stated". Section 38 then lays down those matters over which the Civil Courts have no jurisdiction :

> Civil Courts shall not be competent to decide, in a suit to which all the parties are Mohammedans, except with the consent of all the parties, any questions regarding succession, inheritance, wills, legacies, gifts, marriage, divorce, family relations, or the constitution of wakfs.

Jurisdiction over these matters is expressly conferred on the Sharia Courts by section 6 of the Mohammedan Law Courts Ordinance :

[1] Dr. J. H. C. Morris in 66 *Harvard Law Review*, p. 961.

The Sudan Mohammedan Law Courts shall be competent to decide :

(*a*) any question regarding marriage, divorce, guardianship of minors or family relationship, provided that the marriage to which the questions related was concluded in accordance with Mohammedan Law or the parties are all Mohammedans.

(*b*) any question regarding wakf, gift, succession, wills, interdiction or guardianship of an interdicted or lost person, provided that the endower donor or the deceased or the interdicted or lost person is a Mohammedan.

(*c*) any question other than those mentioned in the last two sub-sections provided that all the parties, whether being Mohammedans or not, make a formal demand signed by them asking the Court to entertain the question and stating that they agree to be bound by the ruling of Mohammedan Law.

It is apparent from these provisions that the jurisdiction of the Civil and Sharia Courts conflict on a number of points. Thus both Courts have jurisdiction :

(*a*) in cases of marriage, divorce, etc., if the parties are not all Moslems, but the marriage was contracted under Moslem law ;

(*b*) in cases of succession to the estate of a deceased Moslem, where non-Moslem parties are involved ; and

(*c*) where all the parties consent to the jurisdiction of the Court which would not otherwise have jurisdiction.

This duplication of jurisdiction is a serious matter because it is not possible to say what law will be applied until we know which court is going to consider the case. It is true that in the event of a conflict of jurisdiction between the Civil and the Sharia Courts the matter must be referred to the Court of Jurisdiction set up by the Judiciary Act, and comprising the Chief Justice, as President, the Grand Kadi, two judges of the Civil High Court and one judge of the Sharia High Court. But unfortunately there is nothing whatever to guide this Court in deciding whether a particular case should go to the Civil or Sharia Courts. No doubt where the parties have consented to the jurisdiction of a Court which would not otherwise have had jurisdiction it is probable that the consent of the parties would be regarded as decisive. But in the other two cases put above it is simply not possible to say how the Court of Jurisdiction would treat a case coming before it. This is a very unfortunate result because it means that it is not possible to state the law, in such classes of cases, with any confidence, since the law to be applied depends on which court is going to decide the case. Thus, to take a simple case, suppose a Moslem man marries a non-Moslem woman in accordance with Moslem law. Both Courts have jurisdiction over such a marriage, but by Moslem law such a marriage is valid whereas by civil law it appears to be void owing to the lack of the necessary formalities. It seems fantastic that there is nothing in the laws which provides which court is to have the final say in such a case.

In addition to the complication introduced by the existence of two sets of Courts of co-ordinate jurisdiction, which we have called the problem of domestic jurisdiction, there is also the ordinary problem of what we have called jurisdiction in the international sense. This problem is common to all legal systems, and arises whenever a case occurs which has some connection with more than one legal system in the world. The question then arises in which country it is most appropriate for the litigation to be resolved. This problem is also at its most intractable in dealing with family law. It might be thought that logically the problem of international jurisdiction should come before the question of domestic jurisdiction, but in fact this is not so. The

reason for this is that there is no universal system of private international law which lays down when countries have jurisdiction in the international sense. Each country works out its own rules for the solution of this problem, and where there are different sets of Courts applying different kinds of law, each set of Courts must similarly work out its own sphere of jurisdiction in the international sense. In other words, until we know whether a case is going to the Civil Courts or the Sharia Courts, we are not in a position to say whether there is jurisdiction at all, in the international sense. The question of domestic jurisdiction must, therefore, always be decided first.

The question of jurisdiction is, of course, only a preliminary stage, although a fundamental one, in the proceedings, because when it is established that a Court has jurisdiction, the next question which arises is, What law shall be applied ? Here again the C.J.O. makes explicit provisions, although unfortunately these are far from comprehensive. Section 5 of the C.J.O. states :

> Where in any suit or other proceeding in a Civil Court any question arises regarding succession, inheritance, wills, legacies, gifts, marriage, divorce, family relations, or the constitution of wakfs, the rule of decision shall be :[1]
>
> (*a*) any custom, applicable to the parties concerned, which is not contrary to justice, equity or good conscience, and has not been by this or any other enactment altered or abolished and has not been declared void by a decision of a competent Court ;
>
> (*b*) the Mohammedan law, in cases where the parties are Mohammedans, except in so far as that law has been modified by such custom as is above referred to.

Finally, section 9 of the C.J.O. states :

> In cases not provided for by this or any other enactment for the time being in force the Court shall act according to justice, equity and good conscience.

We are now in a position to proceed to an examination of the three particular problems which it is the concern of this article to discuss.

I. VALIDITY OF MARRIAGES

Where the validity of a marriage falls to be considered by a Sudanese Court, there is unlikely to be any difficulty regarding the international jurisdiction question. Unlike problems of divorce which have an international flavour, and jurisdiction over which is strictly limited in most countries, problems concerning the validity of marriages are unlikely to arise at all except in circumstances in which the courts would obviously accept jurisdiction in the international sense. This, of course, has nothing to do with the domestic jurisdiction problem, i.e. whether the case should go to a Civil or Sharia Court. The problem here may be conveniently considered under three heads.

(*a*) WHERE BOTH PARTIES ARE MOSLEMS

This is obviously the simplest case. Where both parties to a marriage are Moslems, the jurisdiction naturally falls to the Sharia Courts under the express provisions of the Mohammedan Law Courts Ordinance. It should, however, be noted that the Civil Courts will also have jurisdiction if non-Moslem parties are involved. For example, suppose that a Moslem man marries a non-Moslem woman, and later marries a second wife. If the first wife wishes to dispute the validity of the second marriage,

[1] This section has been held to include questions of breach of promise to marry, and also paternity suits : see *Nur el Huda Abdel Ghani* v. *Omar Hassan*, Sudan Law Reports (1953–4), p. 38.

it would appear that she is a "party" to the case, and that therefore the Civil Courts would have jurisdiction as well as the Sharia Courts. Again, if the validity of a marriage should only be an indirect issue in a case concerning also other persons, one of whom is a non-Moslem, then the Civil Courts have jurisdiction together with the Sharia Courts.

Assuming, however, that the Sharia Courts would normally have jurisdiction in such a case, and that the case would almost certainly come before them, the second question is, What law should be applied ? Here again, the answer is simple, although it may be a deceptive simplicity. Under section 53 of the Mohammedan Law Courts Organisation Regulations the law to be applied is Moslem law, and this means Moslem law as practised in the Sudan, i.e. Moslem law "in accordance with the authoritative doctrines of the Hanafia jurists", except where the Grand Kadi otherwise directs. So long as the persons concerned are Sudanese Moslems no difficulty arises, but it should be noted that it is this same Moslem law which is to be applied to all Moslems, although they may be nationals of, and domiciled in, another country the law of which may be totally different from Moslem law as practised in the Sudan, and in fact, the law of which may not be Moslem law at all. There are, for example, a few Moslems of English domicile. Now the personal law of such persons would normally be the law of their domicile, irrespective of their religion, but it appears that if questions arise under section 53 of the Mohammedan Law Courts Organisation Regulations concerning such a person, the Sharia Courts would apply ordinary Sudanese Moslem law. Again, it seems that the validity of a marriage between, say, a Moslem Indian and his wife, who may both be domiciled in India, falls to be decided by the Sharia Courts in accordance with the law applied there to Sudanese Moslems. The trouble arises from the fact that the draftsman of these laws was really only catering for the obvious and common cases, but laws must also cater for the less obvious and uncommon, and it is accordingly suggested that the law should be amended to provide that Moslems whose personal law is that of another country should be on the same footing as non-Moslems, that is to say, they should be governed in such matters by their personal law. Of course, in many cases, e.g. of Egyptian Moslems, their personal law would be the same as that of Sudanese Moslems, in which case the result would be the same. But such an amendment as here proposed would meet the odd case of a Moslem from a country whose law is different from that applied here.

(*b*) WHERE BOTH PARTIES ARE NON-MOSLEMS

Where both parties are non-Moslems it is clear that only the Civil Courts have jurisdiction, unless the parties consent to submit their dispute to the Sharia Courts, and the application of Moslem law.[1] Prima facie the validity of such a marriage is governed by the Non-Mohammedan Marriage Ordinance, 1926. In other words the question whether the marriage may be void or voidable owing to non-age of the parties, affinity, lack of consent, or lack of the necessary formalities is entirely governed by the provisions of the Ordinance. These provisions are set out in sections 6 to 12 of the Ordinance and it is not thought necessary to go through them in detail here. However, a number of points require clarification.

In the first place the Ordinance does not rule out the possibility of a valid marriage among non-Moslems being contracted in any other way. On the contrary provision is made to enable certain communities to be excepted from the requirements of the Ordinance, and where this is done, section 5 (1) of the Ordinance states :

[1] Or if the marriage was concluded in accordance with Moslem law.

> . . . all marriages celebrated between such persons [i.e. members of the excepted communities] by a minister of such religious community shall if all the requirements of their personal law have been complied with be valid and shall have the effect and involve the consequences laid down by such personal law.

Similarly, it is possible for members of different excepted communities to be married otherwise than under the Ordinance, and in this case section 5 (2) lays down substantially the same provisions as section 5 (1). In this event the requirements of both personal laws must be complied with. Where these two personal laws are different, however, it is hard to see how effect can be given to the words of the sub-section, "that the marriage shall have the effect and involve the consequences laid down by such personal law". Suppose, for instance, that one of the parties has a personal law which recognises the system of community of goods between the partners of a marriage, while the other party's personal law does not recognise this system, the sub-section gives no help in meeting such a case. It is submitted that the words of the sub-section, which is ex hypothesi dealing with parties whose personal law is different, are manifestly defective and require amendment.

Again, the provisions of the Ordinance are open to serious objection in that they appear to assume that personal law is the same as the law of the party's religion. This may well be so in the case of a person domiciled in a country like the Sudan which recognises different systems of personal law, but it is certainly not so in a great part of the world. All common law countries, for example (with the exception of the Asian members of the British Commonwealth) recognise only a single system of domestic personal law. Thus, by English law, the personal law of anyone domiciled in England is English law, irrespective of his religion. There is also ground for thinking that this would also be the law of the Sudan, at any rate so far as the law of family relations is concerned. Thus in *Abdulla Chercheflia* v. *Maria Bekryarellis* (AC/APP/12/1934) the Court of Appeal held, in effect, that the personal law of a person domiciled outside the Sudan is the law which would be applied to him by his own courts. If this is so, then serious difficulties may follow in dealing with the excepted communities, because, for example, a marriage may take place, valid by the religious laws, but not valid by the civil laws of the parties' domiciles. Again, both parties may be of the same religion, and members of the same excepted community, and may marry in accordance with the rites applicable to that community, yet they may have different domiciles, and different personal laws.

It may be noted that the list of excepted communities is fairly substantial, as it includes the Greek Orthodox Church, the Orthodox Coptic Church, the Roman Catholic Church, the Greek Catholic Church, the Maronite Church, the Syrian Catholic Church, the Armenian Catholic Church, the Coptic Catholic Church, the Chaldaean Catholic Church and the Jewish community. The excepted communities for the purpose of section 5 (2), i.e. communities the members of which may marry inter se without complying with the Ordinance, include all the above with the exception of the Greek Orthodox Church, the Orthodox Coptic Church and the Jewish community.

Apart from the special position of the excepted communities the Non-Mohammedan Marriage Ordinance does not apply also to any marriage contracted under Moslem law, or "any valid pagan law or custom". Thus a marriage between Southern Sudanese under valid pagan law or custom would be recognised as valid by the Civil Courts.

Marriage under the Non-Mohammedan Marriage Ordinance is monogamous. Thus under section 6 a marriage under the Ordinance is void if one of the parties

is already married, and it is immaterial whether the first marriage was monogamous or not. Again, under section 12 a marriage under the Ordinance is a bar to a later marriage (except in the event of divorce) whether the later marriage is under the Ordinance or not. However, this section has a proviso which states that if the husband becomes an adherent of the Moslem faith, "and by reason of such adherence his personal status comes to be governed by the Mohammedan Religious Law", then he may divorce his first wife, or take other wives, in accordance with Sharia principles. In the latter event, however, the first wife is entitled to apply to the High Court for a divorce. The words in inverted commas quoted above appear to indicate that a person may become a Moslem without his personal law thereby becoming Moslem law. In other words, a person domiciled, not in the Sudan, but in a country where personal law does not vary according to the person's religion, cannot acquire Moslem personal law merely by becoming a Moslem. His personal law continues to be that of his domicile, and he cannot therefore, by becoming a Moslem, acquire the capacity to divorce his wife, or take other wives under Moslem law.

On the other hand if a non-Moslem, domiciled in the Sudan, changes his religion and becomes a Moslem, it is clear that his personal law will become Moslem law. Such a person would, therefore, come within the provisions of section 12 of the Non-Mohammedan Marriage Ordinance. This is, however, a very odd result, because it appears to be inconsistent with sections 5 and 33 of the C.J.O. Under these sections, as has been pointed out above, the Civil Courts have jurisdiction where all parties are not Moslems, and the law to be applied is either custom or justice, equity and good conscience. There is nothing in section 12 to deprive the Civil Courts of their jurisdiction over such cases. Thus in *Farida Nakhl* v. *Sameer Amer* (1957), where a Copt changed his religion and became a Moslem, after marrying under the excepted communities procedure, and then proceeded to divorce his wife, as a Moslem, it was held by the Court of Appeal that the Civil Court had jurisdiction to deal with the wife's claims to maintenance and other matters.

As we have already seen there is one difficult case where both Courts appear to have jurisdiction. If the parties are not both Moslems and yet contract their marriage in accordance with Moslem law, section 6 of the Mohammedan Law Courts Ordinance confers jurisdiction on the Sharia Courts. But the jurisdiction of the Civil Courts is not ousted in such a case by section 38 of the C.J.O. Both Courts are therefore competent to hear suits in such cases, and if one party commences proceedings in one court and the other party goes to the other court, the matter would then have to be referred to the Court of Jurisdiction. What this Court would do cannot be predicted with any confidence.

Finally a word must be said about marriages contracted abroad. If the marriage is one over which the Civil Courts have jurisdiction it appears reasonably certain that they will apply the normal rules of private international law, i.e. the formalities of the marriage must be governed by the *lex loci celebrationis*, and the marriage must be substantially valid by the personal laws of both parties.

The above provisions relating to Moslems have no parallel as regards pagans. Hence a pagan, for example a Southern Sudanese, who marries under the Ordinance, cannot thereafter contract a second marriage, whether under the Ordinance or by pagan law or custom. Indeed, such a second marriage would constitute bigamy, a criminal offence under section 429 of the Penal Code. This section provides that where a person marries, and such marriage is void "by reason of its taking place during the life" of the person's husband or wife, then the person getting married is liable to imprisonment for a term not exceeding seven years, and also to a fine. How-

ever, no prosecution can be instituted except "upon complaint made by some person aggrieved by such offence",[1] i.e., presumably, the other spouse. It should also be noted that a person who is validly married under pagan law or custom cannot thereafter contract a marriage under the Ordinance.

(*c*) MIXED MARRIAGES BETWEEN MOSLEMS AND NON-MOSLEMS

Mixed marriages raise a host of complicated questions some of which it will be the object of this article to examine. There are three possible cases :

(i) *Marriages contracted Abroad*

In the case of marriages contracted abroad it is again reasonably clear that the normal rules of private international law will be applied. These have been mentioned above and need no elaboration here. One point may, however, be mentioned. I understand that in Moslem law a Moslem woman cannot marry a non-Moslem man. Such a ban is clearly one of substance and cannot be evaded by a marriage in a foreign country which does not recognise the prohibition. So if a Moslem woman, domiciled in the Sudan, marries abroad, a non-Moslem man, that marriage will be invalid here.

(ii) *Marriages in the Sudan contracted under Moslem law*

If the marriage is contracted under Moslem law in the Sudan then as we have seen both Civil and Sharia Courts prima facie have jurisdiction by virtue of sections 33 of the C.J.O. and section 6 of the Mohammedan Law Courts Ordinance respectively. It is suggested that in such a case the Court of Jurisdiction would probably regard the Sharia Courts as the appropriate Court for any proceedings which may arise since the parties have contracted their marriage in accordance with the Moslem forms.

(iii) *Marriages in the Sudan contracted under Civil Law*

If the marriage takes place under the Non-Mohammedan Marriage Ordinance or under any other non-Moslem form of marriage (e.g. under the excepted communities procedure), the Civil Courts have exclusive jurisdiction. The law to be applied must then be the law laid down in the Ordinance so far as it is applicable, or the personal law of the parties in cases of marriage under the excepted communities procedure, or pagan law or custom in cases of a pagan marriage.

It may be convenient at this stage to summarise the ways in which a valid marriage may be contracted by Sudanese law.

(1) A marriage between two Moslems is valid if it complies with the requirements of Moslem law.

(2) A marriage between two non-Moslems is valid :

(*a*) if the parties are pagans married under valid pagan law or custom ;

or (*b*) if the parties are married under the Non-Mohammedan Marriage Ordinance ;

or (*c*) if the parties are married in accordance with the excepted communities procedure ;

or (*d*) if the parties are married in accordance with Moslem law, although there may be some doubt whether such a marriage is valid by civil law.

(3) A marriage between a Moslem and a non-Moslem or between a pagan and a non-pagan is valid if it complies with the Non-Mohammedan Marriage Ordinance, or, so far as the Sharia Courts are concerned, with Moslem law.

[1] Section 173, Code of Criminal Procedure.

(4) A marriage contracted abroad is valid if:
   (*a*) the formalities of the *lex loci celebrationis* are complied with; and
   (*b*) the requirements of the personal laws of the parties are met as regards substance.

II. DIVORCE

In matters of divorce the problem of international jurisdiction is much more troublesome than in matters of validity of marriages. The reason, of course, is that it is not generally desirable for a country to grant divorces affecting the status of parties unless these divorces are likely to be recognised in other countries. Naturally it is a very serious matter to grant a decree of divorce to, say, an Englishman, domiciled in England, if English law will not recognise the divorce. Hence the jurisdiction over such matters is severely restricted in most countries. We may now proceed to examine the question of divorce under the same three heads that we considered in relation to marriage.

(*a*) WHERE BOTH PARTIES ARE MOSLEMS

Once again this is the simplest case. Where both parties are Moslems jurisdiction lies with the Sharia Courts, and the law to be applied is Sharia. No international jurisdiction problem arises because divorce is not a judicial proceeding under Moslem law. This aspect of the matter need not detain us further.

(*b*) WHERE BOTH PARTIES ARE NON-MOSLEMS

Where both parties are non-Moslems the matter falls to be decided by the Civil High Court. This question was exhaustively discussed by the Court of Appeal in *Bamboulis* v. *Bamboulis*,[1] in 1954. The effect of that decision may be summarised as follows.

Firstly, the High Court will not normally assume jurisdiction to grant decrees of divorce except where the husband is domiciled in the Sudan, applying English principles to determine the question of domicile. The Court of Appeal admitted that "there may be cases of exceptional hardship where the domicile test is not applicable and yet nevertheless the petition should be entertained", but they declined to express any concluded opinion on such cases. It may be that the Court was here thinking of the amendments recently introduced into English law by the Law Reform (Miscellaneous Provisions) Act, 1949, and the Matrimonial Causes Act, 1950. The position now is that a wife may petition for divorce even if the husband is not domiciled in England, provided that she has been resident for at least three years in England, or that the husband has deserted his wife and that he was domiciled in England immediately preceding the desertion. It is suggested that it is likely that the Sudanese Courts would accept these as alternatives to the domicile test, especially in view of the extreme stringency of the English conception of domicile.

Secondly, when it has once been decided that the Court has jurisdiction, the next question is, What law should be applied? There is no Non-Mohammedan Divorce Ordinance, so the Courts have perforce to rely on general principles. The provision in section 5 (*b*) of the C.J.O. which requires the Court to apply any "custom applicable to the parties" was held by the Court not to refer to foreign or ecclesiastical laws of divorce. The Court of Appeal held that "custom" in this section of the C.J.O. referred to "local custom originating by usage in the Sudan and is not applicable to

[1] Sudan Law Reports (1953–4) p. 76.

imported rules or laws of foreign origin".[1] Although some of the grounds for this decision may be open to criticism there is one very strong reason not mentioned by the Court for adopting this meaning of the word "custom". If custom includes, say, foreign, or religious laws of divorce, it is quite possible that there may be not one custom, but three or four to choose from. For example, a Greek Catholic married to a Lebanese Christian may be seeking a divorce. In such a case it is perfectly possible that there may be two different civil law systems, and two different religious laws applicable to the parties, and it would be quite impossible to say which of them was to be regarded as the relevant custom. However, the difficulty is that until the *Bamboulis* case it had always been assumed that custom in section 5 did refer to foreign personal laws, and there are authorities to this effect. Thus in *Abdulla Chercheflia* v. *Maria Bekryrellis*, to which reference has already been made, the Court of Appeal held that in the case of non-Moslems domiciled in the Sudan, their personal law was "a custom applicable to the parties" within the meaning of section 5. The conflict between these two cases was referred to in the recent case of *Kattan* v. *Kattan*, 1957 (AC/REV/47/1957). The Court of Appeal here found it unnecessary to resolve this conflict but they did point out that the interpretation of section 5 in the *Bamboulis* case was certainly novel, and they added that "until an opportunity for an exhaustive analysis of the principles underlying it arises, this case should be cited with great reserve".

Thus doubt and confusion are added to the already doubtful and confused situation. It seems quite possible that *Kattan* v. *Kattan* heralds the end of the *Bamboulis* case which has never been well received in the Sudan, but for the moment the case stands, and its effect must be explained. Having discarded "custom" as irrelevant the Court concluded that a divorce could only be granted on the principles of justice, equity and good conscience, under section 9 of the C.J.O. Largely for reasons of convenience the Court held, that they would apply the main principles of English law in matters of divorce. Although this is not an entirely satisfactory result, and the reasons of convenience are not very convincing in view of the frequent application of foreign personal laws in other cases, there is much to be said for having one uniform law of divorce for non-Moslems. If the parties want a religious divorce then their proper remedy is to obtain one from the authorities of their church, but it must be clearly recognised that this will not affect the legal status of the parties. However, it is obvious that the only real remedy for this state of affairs is to pass a comprehensive Non-Mohammedan Divorce Law dealing with the whole field of matrimonial causes.

It appears clear from the *Bamboulis* case that a genuine custom arising from local usage would be applied if properly proved. Hence any pagan laws or customs regarding divorce which may exist in the Southern Sudan could be applied by the Courts if the matter arose.

The difficulties arising from section 12 of the Non-Mohammedan Marriage Ordinance, regarding change of religion, have already been referred to.

(*c*) Mixed Marriages between Moslems and non-Moslems

Once again mixed marriages raise peculiarly difficult problems. It is, anyhow, clear at the outset that the Civil Courts always have jurisdiction over matters of divorce between Moslems and non-Moslems, while the Sharia Courts only have jurisdiction (i) if the parties were married under Moslem law, or (ii) if the parties

[1] Sudan Law Reports (1953-4) p. 82.

submit to the jurisdiction of the Sharia Courts. If the case goes to the Sharia Courts they will apply Moslem law. On the other hand if the case goes to the Civil Courts they will first of all have to satisfy themselves that they have jurisdiction in the international sense as already discussed. Assuming that the case does fall within the jurisdiction of the Civil Courts, the next question is, what law is to be applied? At first sight the answer appears to be exactly the same as in the case where both parties are non-Moslems, but the answer is not as easy as that. Firstly, as we have seen, section 5 of the C.J.O. provides that the law to be applied in cases of marriage, divorce, etc., is Moslem law if the parties are Moslems. If they are not Moslems the Court is to apply any applicable "custom", and failing that it applies justice, equity and good conscience, under section 9 of the C.J.O. Now in the cases under discussion at the moment only one of the parties is a Moslem so that Moslem law should not be applicable under section 5. But under section 12 of the Non-Mohammedan Marriage Ordinance, as we have seen, if the husband becomes a Moslem after his marriage, and by reason of his becoming a Moslem his personal law becomes Moslem law, he may then divorce his wife, or take other wives in accordance with Moslem law, although in the latter event the first wife can apply for a divorce. The question now arises whether this section applies where the husband has been a Moslem all along, i.e. does it apply to all marriages between Moslem men and non-Moslem women? Although there would be a certain degree of absurdity in excluding its operation in such a case, any other conclusion would appear to be inconsistent with the C.J.O. Moreover, it must be remembered that section 12 only applies to marriages celebrated under the Ordinance. It would, therefore, be very odd if a Moslem's right of divorce and remarriage depended on whether he had married under the Ordinance, or, say, in England. It is submitted, therefore, that section 12 should be confined within the narrowest limits possible, and on a literal interpretation it clearly applies only where the husband later changes his religion and becomes a Moslem.

It appears, therefore, that Moslem law, as such, has no application to the question of divorce between a Moslem and a non-Moslem, although the husband can probably take other wives in accordance with Moslem law. Nor, according to the decision in the *Bamboulis* case is there any "custom" applicable to such a marriage. And even if this case is rejected there is no reason why the personal law of the husband should be regarded as the relevant "custom" any more than that of the wife. Nothing remains, then, except section 9 of the C.J.O. requiring the Court to apply justice, equity and good conscience. It is, however, possible that at this point a Court would part company with the *Bamboulis* case and refuse to apply automatically English principles to a marriage between a Moslem and a non-Moslem. It is, for example, perfectly possible that the Court would say that justice, equity and good conscience require it to have regard to the type of marriage, and to the general circumstances of the case. For instance, if a non-Moslem woman marries a Moslem Sudanese in the Sudan and the circumstances show that she has in effect agreed to submit herself to Moslem law, with all its consequences, the Court may feel that it would accord with justice to apply Moslem law to the marriage. Indeed, in such a case the Sharia Courts' claim to jurisdiction would very likely be upheld by the Court of Jurisdiction, although in strict law both Courts would have jurisdiction over the marriage. On the other hand if the marriage took place in the country of the woman's pre-nuptial domicile, or in some neutral country, and it was agreed that the marriage should be monogamous and that the husband would not have a unilateral right of divorce, then there would seem to be a case for not applying Moslem law. It is therefore impossible to dogmatise on this matter since so much depends on the Court's view of what is justice, equity and

good conscience, and, as we have seen, in many cases it is not even certain which Courts will deal with the matter. All this clearly reinforces the necessity for a Matrimonial Causes Act to cover the whole of this ground.

III. SUCCESSION

In cases of succession there are only two possibilities for our purpose, that is, where the deceased was a Moslem, and where he was not a Moslem.

(*a*) SUCCESSION TO THE ESTATE OF A DECEASED MOSLEM

In this case the Sharia Courts always have jurisdiction under section 6 of the Mohammedan Law Courts Ordinance, and the law to be applied will, of course, be Moslem law. However, it must again be pointed out that if non-Moslem parties are involved, and they do not consent to the jurisdiction of the Sharia Courts, the Civil Courts will also have jurisdiction. Under section 38 of the C.J.O. the jurisdiction of the Civil Courts is not ousted unless all the parties are Moslems. It might be argued that in cases of succession there is in fact only one "party", namely the deceased himself, but this, it is submitted, in untenable. Firstly, it would be to ignore realities, since it is obvious that there may be different persons disputing the rights of succession, and they should clearly be regarded as "parties". Secondly, it appears clear that the wording of section 38 postulates that there may be several parties to a case of succession. Thus the section excludes from the jurisdiction of the Civil Courts "a suit to which all the parties are Mohammedans" and which involves "any questions regarding succession, inheritance, wills, legacies, etc.". If in fact it was intended that in cases of succession the only question would be whether the deceased was in fact a Moslem, the section would have been drafted quite differently.

If, therefore, a Moslem dies leaving non-Moslem persons interested in his estate, such as a non-Moslem wife, the effect of the Ordinances referred to above is that both Courts have jurisdiction. If the case goes to the Sharia Courts Moslem law will be applied. On the other hand, if the case goes to the Civil Courts the matter is not so clear. Under section 5 (*b*) Moslem law is only applicable if all the parties are Moslem, so that is ruled out in this case. If the *Bamboulis* case is wrong and "custom" in section 5 (*a*) refers to personal law, then it might be argued that Moslem law would still be applied. But this again is hardly satisfactory since there is no reason why the personal law of the husband should be regarded as the custom applicable to the parties any more than the personal law of the wife. The only alternative seems once again to fall back on justice, equity and good conscience. It is, of course, quite possible that in administering the estate of a deceased Moslem even a Civil Court would be largely guided by Moslem law in the search for justice, equity and good conscience. Yet it can hardly do so in every case without violating natural feelings of justice. I understand, for instance, that a non-Moslem wife inherits nothing from a Moslem husband on intestacy, under Moslem law. To one brought up in a different tradition, this cannot but seem contrary to justice, equity and good conscience, and I cannot see how a Civil Court could apply such a principle if it were administering the estate of a deceased Moslem. It is scarcely necessary to add that the provisions of the Wills and Administration Ordinance do not apply to the estates of Moslems. Once again, therefore, it appears that amending legislation is required, and in view of the increasing number of mixed non-Moslem and Moslem marriages, it is urgently required. A situation in which a person does not know and cannot find out his own testamentary powers is surely intolerable.

(*b*) SUCCESSION TO THE ESTATE OF A DECEASED NON-MOSLEM

This matter has recently been exhaustively discussed by the Court of Appeal in *Kattan* v. *Kattan*, 1957, which has already been referred to. It appears from this case that it is necessary to distinguish between those cases in which the deceased was domiciled in the Sudan at the time of his death, and those cases where he was domiciled elsewhere.

(i) *Where deceased was domiciled in the Sudan*

The succession to the estates of non-Moslems who die domiciled in the Sudan is governed by the Wills and Administration Ordinance. Under the Ordinance intestate succession is entirely regulated by the personal law of the deceased, both as regards movable and immovable property, except that the provisions of the Ordinance relating to the prior payment of debts, funeral expenses and so forth, take precedence over the personal law.

The law of wills is governed partly by the Ordinance and partly by the deceased's personal law. Under the Ordinance the essential validity of a will is referred to the personal law of the deceased. As regards formalities the will is valid if it was made either in the forms recognised by the deceased's personal law, or in the form laid down in section 6 of the Ordinance. This substantially reproduces the terms of the English Wills Act, 1837, and requires, in particular, that the will shall be in writing and signed by the testator and two witnesses. As regards testamentary capacity, the will must have been made by a person of full age (according to his personal law) or if not of full age, by a married person, "having full control of himself and having adequate understanding of the effect of the dispositions made thereby and of the persons who in the case of intestacy partake in his estate".

The only remaining question here is the meaning of "personal law" in this Ordinance. The result of the cases is not entirely clear, but it appears that the personal law is that law which the courts of the deceased's domicile would have applied to him. So in *O.A.* v. *Anba Bola Convent*, 1931 (AC/20/1931), the Court of Appeal held that the personal law of a deceased monk who died domiciled in Egypt was the law which would have been applied by the Egyptian Courts, in this instance, the law of his monastic order. Similarly, in *Kattan* v. *Kattan*, the Court of Appeal held that the law applicable to a deceased who died domiciled in West Jordan was the law which would have been applied to him by the Courts of West Jordan, in this case the rules of the Latin Patriarchal Church.

(ii) *Where the deceased was not domiciled in the Sudan*

In the two cases referred to above, *O.A.* v. *Anba Bola Convent*, and *Kattan* v. *Kattan*, the Court of Appeal held that according to the ordinary rules of private international law, the Wills and Administration Ordinance did not apply to the estates of persons who died domiciled outside the Sudan, as this Ordinance is merely regulating the internal law of the Sudan. Where a person dies domiciled outside the Sudan, the law to be applied depends upon whether the property in question is movable or immovable. Dispositions of movables are entirely regulated by the personal law of the deceased as regards matters of capacity, essential validity and formalities. The Wills and Administration Ordinance has no application whatever here and the alternative form of will given by section 6 is not available. If the personal law requires three witnesses to the will, as was the case here, and the will has only been witnessed by two witnesses, then it cannot be upheld. On the other hand by private international law the disposition of immovables is a matter for the *lex situs* as

regards capacity, essential validity and formalities. The *lex situs* in this instance is to be found in the Wills and Administration Ordinance. Hence in this case the alternative form of will given in section 6 is available. Thus in the result the Court held in *Kattan* v. *Kattan* that the will was valid as regards immovables situated in the Sudan, but invalid as regards movables.

It is obvious from the above discussion of some family problems, which is by no means exhaustive, that the whole of this subject is in a very unsatisfactory state. Nothing short of a comprehensive legislative measure covering the whole field of family relations among non-Moslems, and between Moslems and non-Moslems, will meet the situation. Moreover, if such legislation is to be undertaken there is much to be said for abolishing the whole system of personal law which rules at the moment, and subjecting all non-Moslems to a municipal law of marriage, divorce, and succession.

PHILOSOPHICAL SOCIETY OF THE SUDAN
THIRD ANNUAL CONFERENCE, DECEMBER, 1954

PHYSICAL SCIENCES IN THE SUDAN

INTRODUCTION

The Third Annual Conference of the Philosophical Society of the Sudan was held in University College, Khartoum on 9th and 10th December, 1954. The Conference, the subject of which was "Physical Sciences in the Sudan", was planned not as a forum for the presentation of original work, but rather as a shop-window in which the physical scientist, as distinct from the biological scientist, could display his contribution to the welfare of the country. It is by no means generally recognised that even in a country which is predominantly agricultural the physical scientist has an indispensable role, and it was the hope of those who planned the Conference that this fact should become more widely appreciated.

FIRST SESSION—(1) Presidential Address.

The Conference was opened by the President of the Society, Mr. A. W. Ireland. In his address he surveyed briefly the range of activities of the physical scientist. He pointed out that while man's technical achievements offered immense possibilities of improving living standards, many countries, including the Sudan, were deficient in the basic physical knowledge needed to take advantage of these developments. The President said that he thought, in fact, that the Sudan was in this respect no worse off than most countries and that his observations applied mainly to the educated *élite*. The scientist, he thought, was too often treated either as an odd freak unworthy of serious consideration by the "practical men", or as a kind of magician who could work miracles to order. He expressed the hope that the Conference would do something towards creating in the Sudan a balanced attitude towards the physical scientist, and would lead to a better appreciation of the services he could render to the community.

FIRST SESSION—(2) "Physical Sciences and Mineral Resources", by L. Z. Makowiecki.
(In the author's absence, this paper was read by Mr. G. M. Andrew.)

Mr. Makowiecki opened his paper by pointing out that the rate of new discoveries of mineral resources had lagged behind the demands of modern civilization until a completely new approach was made possible by a better knowledge of the physics of the Earth and the constantly improving techniques of investigating physical properties of the Earth's crust. The instruments used in general geophysics had now been so improved that the very small variations in various fields of force, due to sub-surface irregularities in the distribution of rocks, could be investigated with sufficient accuracy to help in the search for useful minerals.

The physical properties of rocks used for this purpose in applied geophysics are density, magnetic susceptibility, radioactivity, thermal conductivity and chemical composition as revealed by electrolytic action. Every one of these properties produces a more or less static natural field of force which can be measured, and the detected anomalies can often be interpreted in geological terms. Other properties, such as elasticity and electrical conductivity, determine the reactions of various geological systems to artificially-applied forces. Geophysical methods of prospecting can be applied wherever a sufficient contrast in some of these properties and effects exists between the geological body to be studied and the surrounding rocks.

Brief accounts were given of gravity meters, magnetic survey techniques, radioactivity methods and electrical conductivity measurements. The seismic method of prospecting was also outlined. The author concluded by saying that no worth-while results could be achieved without the closest co-operation between the physicist and the geologist. The final arbiter in the search for minerals is always the drill or an open shaft. The main function of a geophysical survey is to limit this slow and expensive procedure to those areas where the hopes of success are highest.

Opening the discussion on the paper, *the President* asked which of the methods described had been used in the Sudan. *Mr. Andrew* replied that the conductivity method had been in continuous use since 1939 in water prospecting. Magnetometer surveys had been made in the south and gravity surveys had been made in the Gash delta to obtain the shape of the underlying rock. A similar survey was in progress in the Red Sea Hills. *Dr. Pereira* asked what success had attended the conductivity method. He remarked that at a recent conference in Nairobi it had been suggested that random bore-holes produced more useful results than conductivity prospecting. Geologists would, of course, select the geologically obvious sites for the bore-holes, leaving the more difficult sites for the geophysicist to explore. *Mr. Andrew* agreed that this circumstance did in fact confuse the assessment of the method, but stressed the value of the negative results obtained. All this led to a brief but entertaining digression on water-divining, after which *Miss Delaney* turned the discussion away from "geopsychics" back to geophysics, and pointed out that the scientific assessments of any of these methods had been made very difficult by the political and social necessity of drilling for water in existing villages and settlements.

SECOND SESSION—(1) "Physical Sciences and Water Resources", by J. J. Glennie.

The object of Mr. Glennie's paper was to show the value of the study of hydrology in the development of water resources in areas remote from the main river. The author began by examining the hydrological cycle (moisture in the atmosphere, rainfall, infiltration, surface run-off, and evaporation) and proceeded to consider the effect of local topography and geology on the factors dominating this cycle. For his first illustration, the author took the almost completely rainless Northern Province, where, he said, nature had tried to redress the balance by supplying a tremendous amount of water underground. The geological basis of this is that a large part of the province consists of Nubian sandstone, which is porous and fissured, so that Nile water penetrates long distances underground. The use of tube wells for irrigation has been examined on the fringes of the Kerma basin.

Passing to the wettest part of the Sudan, in adjoining areas of Equatoria and Upper Nile Province, Mr. Glennie surveyed the topographical features and drew attention to the interesting phenomenon of "creeping flow", which is a feature of the broad impermeable plains of the area. Here, the rainfall may be of the order of 900 mms.; quite a small amount saturates the soil, and in August and September, when rainfall exceeds evaporation, the excess water in the absence of drainage channels creeps away down the gentle slopes, travelling perhaps at a walking pace and rolling on as an unbroken shallow layer.

Mr. Glennie then gave a brief description of the area west of the Nile and south of the Bahr el Ghazal, to show the contrast with the area in the east. In spite of the similar distribution of rainfall in the two areas, the hydrological potentials are very different. In the former area, there are rivers with well-defined catchment areas giving a combined discharge of about three milliards a year, while in the east the water is dissipated in the swamps. The Machar marshes were also described.

The author took Darfur as his final illustration, stressing particularly the geological features. About three-quarters of the province consists of basement complex, covered in the north with fixed sand dunes. In the former, the only place where water can be found is on the surface or in the thin sand below it, and conservation is effected by ponding with earth banks. In the dune-covered area, damming from dune to dune is suggested, care being taken not to break up the thin impermeable clay bottom.

The north-east corner of the province is Nubian sandstone, porous and fissured, and amenable to normal development by deep bores. In the volcanic lavas of Jebel Marra and of the Medob Hills there are perennial streams and springs. The peculiar problem of Darfur is that, although the population density is low and land and rainfall are plentiful, under natural conditions it often happens that harvests cannot be gathered because there is no drinking water, and the absence of distributed perennial supplies leads to concentration round the few that do exist, with disastrous consequences of overstraining of existing supplies. Mr. Glennie concluded his paper with a plea for the co-ordination of water development work into a single organisation.

Opening the discussion, the Chairman, *Mr. H. A. Morrice*, stressed the importance of both evaporation and permeation losses in open water systems, and pointed out that if the proposed Aswan High Dam were built in the Nubian sandstone area permeation losses would be high, but if the dam were sited near Wadi Halfa they would be negligible. After some discussion on the inevitable time-lag between the collection and utilisation of hydrological data, *Dr. Pereira* remarked upon the complexity of the evaporation problem. He pointed out that a controlled evaporation experiment was not the same problem as evaporation from open water, and although instruments were available for the measurement of the former, the correlation factor between the two was not constant. *Mr. Andrew* remarked, with regard to permeation losses, that it was two years after the flooding of the Jebel Aulia basin before such losses ceased to be appreciable. The Chairman closed the discussion.

SECOND SESSION—(2) "Physical Sciences and the Soil", by T. M. Jewitt.

Dr. Jewitt began by defining the concepts "texture", "structure" and "tilth". The first describes the distribution of particle size in the soil, the second the way in which the particles are aggregated. The last, a more difficult concept, depends upon pore space size and the size distribution of the aggregates, and includes in addition a factor of "mellowness", a "mellow" tilth being neither friable when dry nor sticky when wet. Gezira soil has a "blocky" structure and generally a poor tilth. The author went on to deal with the effect of grasses in developing stable aggregates, and pointed out the beneficial effects of grassing and dressing with organic matter, the latter being rapidly oxidized in the Gezira soil. Discussing the chemical basis of this, Dr. Jewitt said that in 1951 a considerable advance was made when it was found that polycarboxyl acids had a good aggregating effect and were resistant to breakdown in the soil. Large-scale application was not yet envisaged, but interest had again been focused on this problem and there was some hope of being able to "separate the mystery from the muck".

Discussing the impermeable nature of Gezira soil as shown by direct experiment, the author drew attention to the positive correlation between pre-sowing rainfall and crop yield, which he thought showed that the rain found its way down deep cracks and thus carried nitrogen down to lower levels than seemed possible on the basis of permeability measurements. The crack hypothesis has suggested experiments in sub-irrigation.

The impermeable nature of the Gezira soil seems to have prevented movement of water on the large scale, for the original salt profile seems to persist and measurements show that any leaching as a result of irrigation must be on a very small scale.

The author then discussed the intensity with which water is held by the soil, which can be measured quantitatively by the suction required to remove it or, at low moisture contents, by the free energy differences between the soil moisture and free water. Cohesion and surface tension were not the only factors involved : in Gezira subsoils the salt concentration is such that there is an osmotic pressure of the order of ten atmospheres, which is a very large contribution to the free energy deficit and a very serious restraint on water uptake by roots. There is a rapid increase in the difficulty of extracting water from the soil from the "full" state down to the wilting point, and there seems to be some conflict of evidence as to how a plant experiences this in taking water from a drying soil. This led the author to suggest that in Gezira soil, a feature of which is unequal drying, some roots may be able to draw water from moist parts while others have ceased absorbing. Another point is that as the suction pressure in the soil increases, the suction in the roots increases as transpiration falls : very small vapour pressure differences between the atmosphere and the evaporating water in the leaves can give rise to considerable suction, transmitted through the xylem to the roots. Using average figures of rate of transpiration per plant, the author calculated that transpiration would be approximately forty-eight cubic metres per day per *feddan* of 20,000 plants, which is a rate sufficient in twelve days to dry out the soil to wilting point to a depth of 54 cm. The actual water supplied during the period of active transpiration is thirty-six cubic metres per day per *feddan*, so that there is a gradual drying-out of the soil which has in fact been observed during the period of rapid growth and high temperatures. The suggestion was made that if the transpiration could be more precisely related to meteorological conditions, it should be possible to apply a calculated amount of water. Calculations on the fate of the transpired water indicate that winds of the order actually observed would be sufficient to remove the water, but it was not suggested that this was the actual mechanism. Calculations also indicate that the volume of water removed through a well-grown cotton crop is not much in excess of that required for nitrogen uptake.

The author concluded with some observations on the chemistry of Gezira clay, which is of the montmorillonite type, and gave some results on exchangeable cation ratios, noting in particular that it would be expected that irrigation would gradually replace sodium by calcium. An increase in the calcium/sodium ratio has been observed in certain *infertile* patches of Gezira soil, which is somewhat unexpected, and it may be that soluble magnesium lower down in the infertile patches plays some role as yet not fully identified. However, there was no evidence of deterioration in the Gezira.

Opening the discussion, *Prof. N. F. Astbury* asked whether the problems of irrigation and evaporation were amenable to formal analysis, and whether spray irrigation was of any value. *Dr. Jewitt*, in answer to the second question, said that spray irrigation had been tried on a small scale prior to sowing, but the results had been doubtful. *Dr. Pereira* said that Penman of Rothamsted had set up energy-balance equations for the Ouse and Thames catchment areas which had been very successful. Of course, full meteorological information was essential. Replying to a question from *the President*, *Dr. Jewitt* said that there was no doubt about the beneficial effect of pre-sowing rain or irrigation. Other points raised in discussion were the beneficial effect of frequent small irrigations on a shallow-rooted crop, and the dependence of a good tilth upon pre-sowing rain or irrigation (*Prof. B. M. Boyns*) ; and the possibility

of correlation between cloud cover and crop growth (*Mrs. Andrew*). *Dr. Jewitt* said that there was no such correlation.

At the end of this session an exhibition of instruments and apparatus was opened in the physics laboratories of the University College. A number of instruments for teaching and research were on display, some made in the Faculty of Science workshop. The Meteorological Department showed radio-sonde instruments and a "Sferic" storm-recorder. Irrigation contributed an echo-sounder used for plotting the profile of the Nile bed. The ionospheric recorder of the Physics Department of the University College was shown in operation. Very considerable interest was aroused by this exhibition.

THIRD SESSION—(1) "Meteorology and its application to the Sudan", by S. J. Rogers.

The speaker gave a brief introduction on the development of meteorology as a branch of science in general, and on its gradual introduction into the Sudan. He explained how a network of observing stations was set up in this country, beginning on a very small scale in 1900, and developing into the present organisation of some sixty meteorological stations, equipped with a radio-sonde station at Khartoum, a modern radar storm-detector at Khartoum airport, and a network of three "Sferic" stations with cathode-ray direction-finders for the location of thundery areas. Mr. Rogers also gave a brief account of the tasks of meteorologists in this country; the setting-up of stations, the training of staff, aviation forecasting from its early phases for flying-boats on the Nile to the present-day requirements of inter-continental aircraft. New scientific techniques had had to be developed for forecasting in such a turbulent tropical region as the Sudan. The speaker concluded by explaining how meteorology may help in the further agricultural development of the Sudan, in the development of public and transport services, and in the new fields of utilisation of wind power and solar energy.

Opening the discussion, the Chairman, *Capt. Ogden*, drew attention to the importance of meteorology in the Sudan as reflected by the constant references to it in the other papers presented at the Conference. As regards the accuracy of forecasts, he thought that the public was often unfair to the forecaster; it remembered his occasional failures but forgot his very much more frequent successes. *Mr. U. Rath* said that the accuracy of forecasting in the Sudan was higher than that in many other regions, due to the climate with its long periods of clear skies; but that unfortunately the relatively infrequent situations associated with dust storms and thunderstorms were usually those in which forecasting failures might have the most serious consequences. Further detailed research into these weather situations is very desirable. *Prof. Astbury* emphasised that the acquisition of observational data was a necessary, but by no means a sufficient condition for the solution of such problems. Improved instrumentation did not in itself guarantee progress. Some aspects of the utilisation of solar energy were commented upon by *Prof. Astbury*. The total solar energy falling upon the lawns of the University College was considerably greater than the output of the Burri power station, but there were considerable practical difficulties in collecting solar energy. Reference was made to a solar cooker recently tested in the University College. *Mr. Morrice* commented on the possibility of using wind-power in the Sudan for the pumping of water and the generation of electricity, and compared the situation with that in Australia. *Mr. Glennie* thought that the capital cost of a wind-power installation might well be offset by its low recurrent costs as compared with those of installations using imported fuel.

THIRD SESSION—(2) "The Organisation of Research", by N. F. Astbury.

Professor Astbury began by advocating a wider recognition of the practice of science (a description which he preferred to the term "research") for the benefit of the community and furnished a review of the practice of science in Britain and elsewhere, with the object of posing the question of the relevance of such developments to the Sudan. The lecturer indicated the principles underlying the organisation of both State-sponsored and industrial research, with special reference to its economic aspects and emphasising the necessity of a balance between the effort expended on primary and on secondary industries. Admitting his inability to answer unaided the question he had posed at the outset, Professor Astbury asked whether the financial resources of the Sudan were compatible with the minimum financial basis necessary for such research projects as he had described. He concluded by emphasising the need for an appreciation in the Sudan of the commonly accepted views on the position of applied science ; and pleaded for the formation of a *corps d'élite* of natural scientists in the Sudan, and for the establishment of the nucleus of a national laboratory and research organisation.

Discussion of Professor Astbury's paper was abandoned owing to shortage of time.

FOURTH SESSION—(1) "The Physical Sciences and Surveying" by D. F. Munsey. (The substance of Mr. Munsey's paper has already been printed by the Sudan Survey Department—*Precise Measurement of Distance*, by D. F. Munsey, F.R.I.C.S., Survey Department Professional Paper No. 1, January 1957. An abstract of this paper follows.)

The system of survey control known as first-order triangulation and its layout in various countries were described. The location of the measured sides or base-lines was discussed and the difficulties of good expansion to the main sides of the triangulation was emphasised. The development of theodolites for angular measurement was described and it was shown that the modern geodetic theodolite is so handy and accurate that the tendency is to complete observations at a station with such rapidity that the vagaries of horizontal refraction may not be overcome. An estimate was given of the precision of an observed angle.

The history of linear measurement of bases was traced over the last two hundred years. Apparatus was cumbersome before the introduction of the flexible tape or wire in 1885 and errors due to uncertainty in temperature were not overcome efficiently until the discovery of invar in 1896. Speed of measurement in the field was discussed with particular reference to the Sudan. The absolute accuracy of modern bases and the main sides of the triangulation were stated.

The application of wireless waves to surveying was next considered and time signals were mentioned. The uses of radar were examined and it was shown that, under suitable conditions of observation, distance between ground stations can be measured to one part in 50,000, that is to say to second-order accuracy. In spite of the fact that the accuracy of first-order triangulation cannot, at present, be achieved, radar trilateration, or the measurement of the sides of each triangle instead of the angles, was shown to have special value in certain undeveloped areas. Its application to the Sudan was, however, very unlikely.

Finally it was shown that a recently invented and relatively inexpensive instrument called the geodimeter had tremendous possibilities for the precise measurement of distance by transmission and reflection of light pulses between intervisible points. The lengths of the sides of first-order triangulation might thus be determined and it

should be possible to eliminate base-expansion figures and the measurement of bases with invar tapes. It was not likely that geodimeter trilateration would replace triangulation but the measurements by geodimeter at frequent intervals along a chain of triangles should yield more consistent results than the present method.

Lastly it was emphasised that neither of the revolutionary methods of linear measurement described was of value for the measurement of short distances and that their impact would not be felt directly for large-scale mapping carried out in peace time.

Opening the discussion on this paper, *Professor Astbury* remarked that it had given yet further illustrations of the ways in which classical physics, aided by modern techniques, was being applied in present-day problems. He pointed out that the principle of the geodimeter was in fact used by Fizeau in 1849 in his classical "toothed wheel" experiment to determine the velocity of light. In Fizeau's method, the light beam was modulated mechanically while in the Bergstrand method, on which the geodimeter was based, the modulation was done electro-optically by means of a Kerr cell, the modulation frequency being 8 mc/s. This frequency is controlled and is stable to perhaps one part in 10^8, and provides the basic time measurement. Commenting on the problem of refractive index, *the Chairman* said that while he thought that this could be determined with sufficient accuracy for light waves and for centimetre radio waves, he was not yet sure that this was so for lower frequencies. *Mr. Abd al-Rahman* asked why base measurements were taken at night in the Sudan. *Mr. Munsey* explained that in using an invar tape for base-line measurements wind was very troublesome, and conditions in this respect were best during the dark hours. *Mr. Burden* asked how difficulties due to refraction were overcome in the measurement of horizontal angles. *Mr. Munsey* replied that there was no instrumental technique for this, but that a skilled observer using a double hair-line could secure reproducible observations, particularly when the work was restricted to the two hours after sunrise and the two hours before sunset.

FOURTH SESSION—(2) "The Place of Chemistry in the Sudan", by D. N. Grindley.

In this paper the author explained the nature and diversity of the chemical work carried out by a very small staff in the Sudan Government Laboratories. The principal functions were the anlysis of drinking-water, and of water for irrigation and industrial purposes ; the control of foodstuffs, coal, alloys, building materials, soap, etc.; and the examination of post-mortem specimens in connection with poisoning cases, in which poisons of an unusual type are sometimes encountered. The laboratories also analyse blood and other body fluids, examine and analyse drugs such as hashish, and, in connection with criminal investigations, have been called upon to undertake a chemical examination of forged documents. In the course of his paper Mr. Grindley gave several examples of fields in which the activities and facilities of the Government Laboratories could be expanded, and of programmes of research of a directly utilitarian nature which might well be initiated.

FOURTH SESSION—(3) "The Physical Chemist in the Sudan", by H. E. Hallam.

Mr. Hallam pointed out that the number of chemists working in the Sudan was extremely small and that no one of these was a practising specialist physical chemist. He reviewed the many physico-chemical techniques which are employed in the Sudan, mainly by the biological scientists. He also described others, several of which might well be applied to local problems. These methods were discussed under three headings,

according as they exploited the optical, the electrical or the general properties of matter.

The Chairman, Professor N. F. Astbury, bringing the Conference to a close, regretted that there had not been time for the discussion of the last two papers. He thanked, on behalf of the Society, all those who had contributed to the success of the Conference.

Professor Astbury concluded with a renewal of his plea for a greater recognition in the Sudan of the value of research in both pure and applied science ; and suggested that one obvious and urgent need was a goal to which the science student could strive. He again urged the creation of a *corps d'élite* of selected students as a nucleus of practising physical scientists in the Sudan, and suggested that it was not too early to consider the foundation of a National Laboratory and a central research organisation.

The President, Mr. A. W. Ireland, paid a tribute to Professor Astbury's organisation of the Conference. The papers had been particularly valuable in demonstrating the close inter-relation between the various branches of physical science which were employed in the service of the Sudan. The work was, however, still carried on by too small a team and much expansion was needed if the full benefits of the physical sciences were to be obtained. He thought that if the Conference had brought home these two points it would have succeeded in its object.

PHILOSOPHICAL SOCIETY OF THE SUDAN

HON. SECRETARY'S ANNUAL REPORT

1st October, 1957 to 30th September, 1958

1. *Membership*

Thirty-six ordinary members were elected during the season. This is a smaller intake compared with the record of sixty-four for the last season. However, the total membership figure of 168 is the highest in the Society's history. The number of those who left the Society for various reasons was fewer this season by twenty-four than it was during the 1956/57 year when it was forty-one.

The present membership is as follows :—

Honorary Members	3
Ordinary Members	164
Family Members	1
Student Members	—

2. *The Thirteenth Annual General Meeting*

The thirteenth Annual General Meeting was held in the Botany Lecture Theatre, University of Khartoum at 6 p.m. on Tuesday, the 14th January, 1958.

The following officers and members of the Council were elected for the session 1957/58 :—

President	S. D. Fawzi
Vice-President	K. J. Krotki
Joint Hon. Secretaries	J. H. G. Lebon Hasan Bashir
Hon. Treasurer	M. Jolliffe
Members	G. N. Sanderson M. A. Abdalla H. Butler M. I. Nour W. J. Hill M. M. Mekkawi E. G. Guttman J. Rzoska

Ex-Presidents, ex-Officio members of the Council, were :

H. Sandon
M. Shebeika
H. A. W. Morrice

3. *Council*

Two meetings of the Council (tenth and eleventh) were held during the season. The first was concerned with matters arising from the sixth and seventh annual conferences and the ordinary programme for the 1958/59 session, while the second dealt with details of the seventh annual conference and suggestions for the eighth.

4. *Executive Committee*

In addition to the five officers of the Society, the following were elected to the Executive Committee :—

M. A. Abdalla
H. Butler
G. N. Sanderson

The Committee met twice during the session, and dealt mainly with current business of the Society, e.g. sale of publications, conference reports, etc.

5. *Publications Sub-Committee*

The business of this Committee was transacted informally. The paper by M. I. Nour was recommended for publication, and part of Dr. G. A. Worrall's.

6. *The* 1958 (*Seventh*) *Annual Conference*

The subject chosen for the (1958) Seventh Annual Conference is "The Sudan in History" and Mr. G. N. Sanderson was appointed Convener.

7. *The* 1957 (*Sixth*) *Annual Conference*

This conference was held on 16th and 17th January, 1958, in the Science Lecture Theatre of the University of Khartoum. The Convener was Mr. K. J. Krotki, who was assisted before and during the Conference by Mr. M. Jolliffe, members of the Society and staff of the Department of Statistics. An introductory speech was made by the Minister for Social Affairs, before the first of the four sessions. The programme was :—

18.00	16.1.58	C. H. Harvie	"What is the use of the First Population Census ?"
10.00	17.1.58	K. J. Krotki	"Demographic Survey of Sudan."
12.00	17.1.58	S. Fawzi	"The Labour Force of Sudan."
18.00	17.1.58	R. Condie	"Introduction to Written Contributions."

The number of members and guests present was 137, 112, 94 and 48 (in order of the sessions).

The papers presented to the Conference, with maps prepared by the Department of Geography, University of Khartoum, which were displayed in the Theatre, are in course of being published in collaboration with the Department of Statistics.

8. *Ordinary Meetings*

Six meetings were held during the season.

85th Meeting : 29.10.57—44 members and guests present.

Chairman Dr. M. A. Nour

Speaker Dr. G. A. Worrall

"Soils in the vicinity of the Three Towns and their agricultural and development value."

86th Meeting : 26.11.57—49 members and guests present.

Chairman Mr. E. Tenebaum

Speaker Sayid M. I. Nour

"Land tenure and custom in the Northern Sudan."

87th Meeting : 31.12.57—38 members and guests present.

Chairman No Chairman

Speaker Mr. H. A. W. Morrice

"The planned development of water resources in the Far West of America and in Sudan."

88th Meeting : 28.1.58—68 members and guests present.

Chairman Mr. I. Gillespie

Speaker Sayid I. M. Khalil

"Developing the animal wealth of Sudan."

89th Meeting : 25.2.58—63 members and guests present.

Chairman Prof. M. Shibeika

Speaker Mr. G. N. Sanderson

"The Fashoda Incident."

90th Meeting : 25.3.58—32 members and guests present.

Chairman Mr. G. N. Sanderson

Speaker Mr. O. H. Myers

"The Development of Archaeology."

9. *Geophysical Sciences Section*

was dormant throughout the season.

10. *Additional Meetings*

Two additional meetings were held :

11.2.58 : 50 members and guests present :

Chairman Mr. H. A. W. Morrice

Speaker Mr. V. C. Robertson

"Irrigational and agricultural potentialities of the Jebel Marra Area of Darfur."

17.3.58 : 12 members and guests present.

Chairman Sayid Charley Antoun

Speaker Mr. A. C. Brown

"The Earth and the International Geophysical Year."

11. *Special Communications*

None were received during the season.

12. *Field Days*

An excursion by launch to the Sabaloka gorge took place on 6th October, 1957, and was much enjoyed by members and their guests.

13. *General*

The Council believes that the Society has had a successful year and may look forward to the future with confidence. It is now reaping a harvest from its publications, both in terms of recognition of its work and financially. The foresight and enterprise of those who initiated the series of annual conferences is deserving of appreciation.

H. A. BASHIR & J. H. G. LEBON,

Joint Honorary Secretaries.

INCOME AND EXPENDITURE FOR THE YEAR ENDING THE 30TH SEPTEMBER, 1958

1956/57 £S		1957/58 £S	£S	1956/57 £S		1957/58 £S	£S
	To General Administration—				By Subscriptions—		
6.120	„ Advertising	3.060		—	Ordinary 1957	6.000	
7.960	Postages	11.545			Ordinary 1958—		
4.570	Stationery	5.185		181.500	127 at £1.500	190.500	
10.850	Duplicating and Addressograph	5.345		8.000	8 at £1.000	8.000	
32.000	Printing	4.500		500	Family Subscriber	500	
—	Clerical Assistance	3.500		1.000	Transfer from Reserve Account	—	
1.000	Hire of Microphone	—		2.500	Arrears from previous years ..	—	
			33.135				205.000
	„ Purchases—				„ Sales of Publications—		
99.750	Sudan Notes and Records ..		101.250	12.675	Food and Society Pamphlets ..	43.345	
	„ Publishing Expenses—			10.100	Transport, etc., in Sudan ..	46.562	
94.000	Transport, etc., in the Sudan ..	—		—	Population—written contributions	5.300	
—	Postage	3.000			Population—pre-publication sub-		
—	Clerical Assistance	14.000		—	scription	81.200	
			17.000				176.407
	„ Expenses of 6th Annual Conference—						
	Stationery and Duplicating ..	17.825					
	Typing	13.000					
	Postage	2.000					
	Advertising	3.250					
	Shorthand writer	4.500					
	Attendants and Cleaners ..	2.750					
	Tea Party	7.000					
—			50.325				
—	„ Sabalouka Excursion		3.305				
	„ Excess of Income over Expenditure						
—	carried to Capital Account ..		176.392	39.975			
256.250			381.407	256.250			381.407

FOOD AND SOCIETY IN THE SUDAN

	£S		£S
30th September, 1958. Balance owing to Ministry of Finance carried to Balance Sheet	346.874	December, 1957. By Balance from 1956/57 .. .. 30th September, 1957. Sales	130.194 216.680
	346.874		346.874

PHILOSOPHICAL SOCIETY OF THE SUDAN FINANCIAL STATEMENT, 1957–58

CAPITAL ACCOUNT

		£S			£S
30th Sep., 1958.	To Reserve for cost of printing the report of the 6th Annual Conference	100.000	1st Dec., 1957.	By Balance from 1956/57	85.851
	„ Balance carried to Balance Sheet	162.243		„ Income and Expenditure Account	176.392
		262.243			262.243

BALANCE SHEET OF THE SOCIETY AS AT THE 30TH SEPTEMBER, 1958

1956/57 £S	*Liabilities*	1957/58 £S	1956/57 £S	*Assets*	1957/58 £S
	Sums due to—		191.755	Cash at Bank	447.772
96.750	Sudan Notes and Records	101.250	5.730	Cash in Hand	8.345
130.194	Ministry of Finance for *Food and Society* ..	346.874	18.130	Post Office Savings Bank	18.130
	Reserve for cost of purchasing copies of the		—	Barclays Bank Savings Account	100.000
—	report of the 6th Annual Conference ..	100.000	—	Sundry Debtors	36.120
2.820	Reserve for Sabalouka Expedition	—	100.000	Stock of Publications	100.000
85.851	Capital Account	162.243			
315.615		710.367	315,615		710.367

8th November, 1958

MICHAEL JOLLIFFE, *Hon. Treasurer*

I have examined the Books of the Society, Bank Statements, and the relevant vouchers ; and I certify that the Income and Expenditure Account and the Balance Sheet are in accordance therewith.

12th November, 1958

COLIN SMITH, *Hon. Auditor.*

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I. BULLETINS

No. 16. POLLARD, D. G.: 1956. Insect pests of vegetables in the Sudan.

II. MEMOIRS (RESEARCH DIVISION)

No. 53. POLLARD, D. G.: 1954. The Melon Stem-Borer, *Apomecyna binubila* Pascoe (Coleoptera: Laminae), in the Sudan. (Reprinted from *Bull. Ent. Res.*, 45, 1954, pp. 553–61.)

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No. 57. KNIGHT, R. L. : The genetics of blackarm resistance. IX—*Gossypium anomalum*. (Reprinted from *J. Genet.*, 52, pp. 466–72.)

No. 58. KNIGHT, R. L. : Breeding Sudan Cotton. (Reprinted from *Emp. Cott. Gr. Rev.*, 31, pp. 1–11.)

No. 59. POLLARD, D. G. : A note on the biology of *Calidea duodecimpunctata* (Fabr.) in the Sudan. (Reprinted from *Bull. Soc. Fouad Ier Entom.*, 38, pp. 291–5.)

No. 60. TARR, S. A. J. : Protection of sorghum against soil fungi, soil pests and smut by combined fungicidal-insecticidal soil dressings. (Reprinted from *Ann. Appl. Biol.*, 41, pp. 578–85.)

III. MEMOIRS (FORESTRY DIVISION)

No. 7. JACKSON, J. K. : Forestry Research in the Sudan.

No. 8. VIDAL-HALL, M. P., and WILLIAMS, G. H. D. : Teak as a plantation crop in the Sudan.

No. 9. PEAKE, F. G. G. : Notes on Die-Back in Sudan Sunt (*Acacia arabica*).

IV. MEMOIRS (MISCELLANEOUS)

No. 5. JEFFERSON, J. H. K. : The Soil Conservation Section.

V. ARABIC BOOKLETS

No. 2. FERGUSON, H. : The Zande Scheme.

No. 3. FERGUSON, H. : The Gezira Scheme.

No. 4. SHAZALI, A. E. K. : Notes on Fruit-Growing.

No. 5. EL SAYEGH, Y. A. : Gum in the Sudan.

No. 6. MARSHALL, W. E. : Bee-keeping in the Sudan.

BOOK REVIEWS

JEAN CHAPELLE : *Nomades Noirs du Sahara.* Paris, Plon, 1957. 449 pp.

Monsieur J. Chapelle has rendered a real service to those interested in North African ethnography by writing a systematic monograph on the TOBOU or TIBU.

The TIBU are to be found from the Lake Chad region in the west to Darfour in the east. The two largest sections of this rather heterogenous group are called the Teda of the North, depending for the most part on camels, and the Daza of the South relying primarily on cattle for sustenance, pack animals and transportation.

The author begins with a rather sketchy history of the group, handicapped as he is by the lack of adequate documentation. He then turns his attention to the TIBU of today and describes the various groups to be found in the many regions which they occupy. After a brief description of what we can assume to be a typical camp, he describes in some detail how the Saharian environment is utilised. This is perhaps the best chapter of the book. Later we are told about the domestic life, the life cycle, social life, clan organisation and finally certain aspects of TIBU religion are discussed.

The merit of this book is in having blocked out the outlines of TIBU culture and social organisation. Much, however, remains to be done. After reading this work one feels the need for more intensive studies of one or more TIBU sub-group so that their social structure can be brought to light. Most of the information on this subject, given here, is anecdotal and hence not entirely satisfactory. This is not meant to be a criticism of the author or his work, since his aim was obviously not that of providing us with an intensive structural analysis of a local community but rather a more general description of the population as a whole. The book may well whet the appetite of a hardy young scholar to carry out the much-needed research. We shall then be doubly grateful to Monsieur Chapelle.

Before closing, I should like to mention a few points on the make-up of the book itself. The photographs are magnificent, far superior to what one expects to find in most ethnographic monographs. The maps are adequate, and many. The drawings are very good. Finally, the two indexes are doubly welcome since aids of this kind are frequently lacking in French scholarly works. F.R.

LLOYD A. FALLERS : *Bantu Bureaucracy. A Study of Integration and Conflict in the Political Institutions of an East African People.* Published for the East African Institute of Social Research by W. Heffer and Sons Ltd., Cambridge. 30*s*.

The author of this book is primarily concerned with the study of integration and conflict among some of the institutions of the Soga, one of the Inter-Lacustrine Bantu groups living to the east of the Victoria Nile, between lakes Victoria and Kyoga in the Eastern Province of Uganda.

The first chapter is devoted to exposing the author's theoretical approach to the sociological problem of integration and conflict in political systems, with special emphasis on the situation to be found among the Soga.

The second chapter recounts the history of the people from 1862, the date of Speke's visit, he being the first European to leave records of travel in this region. The view held by some that the Bantu states in this region are the result of Hamitic conquest is discussed. The author finds that the evidence to confirm this hypothesis is lacking.

The economic and technological foundation of Busoga society is next examined, followed by a brief discussion of the kinship system of the group.

The last two-thirds of the volume deals with Fallers' major subject, namely the political system of these people. To attempt to outline all the material would be impossible in a brief review. The richness of the data provided would make this quite unjustified. The author has discussed the political community from a number of points of view, examining the rôle of the chiefs, the protectorate government, the village headmen, etc. Much that is valuable comes out in his analysis. For example he points out very lucidly the problems arising from the introduction of the ideals of the British Civil Service into a society whose political institutions were organised on quite different principles. This part of the book can be read with profit not only by those interested in this area, but by all concerned with the introduction and perpetuation of "Indirect Rule" in Africa or other parts of the world. The type of rôle-conflict inherent in this particular situation must arise in many other areas.

The rôle of the Administrative Officer is carefully examined and his particular problems are outlined. While not totally ignored in most anthropological reports, rarely is the spotlight turned on the expatriate administrator. Fallers' discussion shows that not only is his rôle important—a fact that is widely accepted—but also that it may be usefully treated in the same way as those of members of the indigenous society.

This book can be highly recommended to all interested in the political system of non-European peoples and in the dynamics of political change. It should occupy an honoured place in the shelves besides a constantly growing number of works by social anthropologists dealing with these and related problems, especially those sometimes referred to as members of "The Manchester School". Both Lloyd Fallers and the East African Institute of Social Research are to be congratulated. F.R.

CORRESPONDENCE

Faculty of Science,
University of Khartoum.

10th Jan., 1959.

The Editor,
Sudan Notes and Records.

Traditional methods of swimming in the Sudan.

Dear Sir,

The origins of the different methods of swimming are, no doubt, among the trivialities of human cultural history. But even trivialities are often of interest to someone or other and therefore merit accurate terminology. For this reason I would like to correct the slip made by Rolf Herzog in his recent article on "Ethnographical notes on the Sudan" in which he states that the early eighteenth century Nubian's way of swimming, as described by Krump, was "the style known as the crawl in our day" and that it "seems to have been common in the Near East since the times of Babylon and Assur". To a swimmer these statements are startling, for we have been accustomed to consider that the crawl, and indeed all styles of swimming in which the arms work alternately, with the recovery stroke taken above the surface of the water, originated outside the Old World and have been introduced to it only in recent years.

The first such style to be brought to Europe was introduced in 1873 by J. Trudgen (after whom it is named) who learnt it while living somewhere in South America. It was described as "peculiar to Indians and those who get their living on surf-beaten shores". The second part of that sentence would apply even more forcibly to the true crawl which originated somewhere in the South Seas and was brought to Europe by Australian swimmers in the opening years of the present century.

Such styles of swimming are obviously not suited for the use of anyone who has to carry things across a river and for them to have occurred among the agricultural populations bordering the Nile or the rivers of Mesopotamia would have been an ecological improbability. It would have been equally improbable for them to have been forgotten throughout the rest of the Old World if they had once been known there.

Krump's description, as translated by Crawford, is perfectly clear. "People young and old cross the river like poodles, with their clothes tied on their heads. Their manner of swimming is quite different from that of us Germans ; they do not extend their legs outwards but work their arms forward alternately, thrusting against the water downwards." This is not the crawl but the dog-paddle and it is this style of swimming which seems to have been the only one known to the ancient world. It is the style depicted in Layard's collection of Assyrian sculptures in the British Museum. The coin of Abydos shows Leander dog-paddling across the Hellespont. (Incidentally, to a nation of athletes such as the Greeks, swimming across the Hellespont would have merited little comment if they had known the crawl ; but, performed with a stroke as mechanically inefficient and therefore slow and exhausting as the dog-paddle, it must indeed have been an epic feat of endurance.) It is also said that descriptions of swimming in the Scandinavian sagas and of Beowulf's famous swimming exploits in the Anglo-Saxon poem show that the same style was used among the Germanic peoples.

I regret that, having no work on the history of swimming available here for reference, I am not able to give the time or the circumstances under which this dog-paddle was replaced in Europe by the breast stroke which would have been the one familiar to Krump in Germany. The same consideration must excuse my use of such vague names as "South America", "Indians" and the "South Seas". These matters are, however, unimportant in a note which is intended simply to forestall any misunderstandings that might arise from Herzog's misuse of the technical term "crawl".

H. SANDON.

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P.O. Box 410,
Khartoum.

29th January, 1959.

Editor,
Sudan Notes and Records.

Dear Sir,

During a visit to Erkowit in June 1958, I observed the general drying out of the Dragon tree (DRACAENA OMBET), known locally as To'OMBAT, that used to add to the scenery of Erkowit Hills.

Hundreds of the dry and decaying trees were observed, while only two living trees, but almost dry, were seen near the motor road at Erkowit.

Lower down the valley of Khor Dahand on the Gebeit-Suakin road 9 living trees were observed in Nov. 1958, while dead trees were abundant.

Although the Dragon tree has no valuable wood, the sword-like leaves are used for making first-class ropes (see Mrs. Crowfoot's *Flowering Plants of The Sudan*).

The inhabitants attribute the wholesale drying out of the To'OMBAT to be due to a succession of 4 or 5 dry years before the fair rains of 1957/58 and not to the rope-making business.

G. Y. KARKANIS,
Asst. Director, Geological Survey Department.